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A Paper
ON
THE TREATMENT OF CANCER OF THE RECTUM WITH RADIUM.*

BY
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SURGEON TO ST. BARTHOLOMEW'S HOSPITAL, AND TO ST. MARK'S HOSPITAL FOR DISEASES OF THE RECTUM.

RADICAL surgery for cancer involves some mutilation of the human body. The appeal which radium makes to both surgeon and patient is the hope of a cure without disfigurement.

In the case of the tongue, the larynx, the breast, this appeal is outstanding. Much has been accomplished to substantiate the claims of radium *versus* surgery in these situations, though they are not yet so firmly established as to be unassailable.

If radium treatment of rectal cancer can be raised to the same level, and if it can supplant radical surgery, it must be able to cure the disease without a permanent colostomy and to leave a rectum which can function. This ideal, though possible in certain instances, as I have shown, is a long way off. Nevertheless it is one to be aimed at, and justifies intensive research. It is generally recognized that the present methods of radical surgery for cancer of the rectum in its early stages cure a high percentage of cases, but they involve the stigma of colostomy.

SPREAD OF CANCER OF THE RECTUM.

The recent work of Dr. Cuthbert Dukes[1] on the spread of cancer of the rectum suggests that it is not necessary to excise the rectum completely and establish a permanent colostomy for an early carcinoma which has not penetrated the rectal wall. Dr. Dukes has shown on histological evidence, based on a hundred consecutive specimens of excised rectums, that lymphatic invasion does not occur until the growth has penetrated through the longitudinal coat, and, further, that the line of spread is in the main to the retrorectal space and upwards along the superior haemorrhoidals. So far as this series of cases can be relied on to represent the average, the lines of lateral and downward spread along the middle and inferior haemorrhoidals are negligible. These observations, if confirmed in a further series of cases, are of the utmost importance, and have an important bearing on treatment either by irradiation or by radical surgery.

LOCAL RESECTION FOR EARLY CARCINOMA.

If the growth can be removed freely by some form of local resection and the rectal passage maintained, this method may be justified on histological grounds, whether or not a temporary colostomy is required. The view, which has held ground for twenty years or so, that, however early the carcinoma, complete removal of the rectum and perirectal lymphatics is essential, must be reconsidered, and the methods of thirty years ago may perhaps be reintroduced.

Acting on these views, I have treated the last three cases of quite early mobile carcinoma of the rectum by local resection, one without a colostomy and two with a temporary colostomy. Time alone will show whether this procedure, based on histological evidence, is justified by ultimate results. It may be mentioned here, however, that the results of Harrison Cripps over twenty years ago, and Grey Turner in more recent years, show that end-results of operations, less radical than now usually considered necessary, are remarkably good.

Can radium treatment of an early carcinoma compete with a local resection which aims at avoiding a permanent colostomy? These three cases could have been dealt with quite easily and thoroughly by interstitial irradiation. Two of them were amenable to vaginal irradiation and the other to posterior barrage after resection of the coccyx. That these were not so treated, in spite of some successes in similar cases, is due to the fact that it was impossible to give any promise that radium would be successful.

IRRADIATION OF AN EARLY GROWTH.

Sufficient evidence has been obtained in my series of cases to show that an early growth of the rectum can be destroyed with radium without colostomy (or with a temporary colostomy) and without interference with the function of the rectum, though no observations are available, on a five-year basis, as regards recurrence. If, however, local resection with little or no immediate mortality, and without permanent colostomy, should replace radical excision for similar cases, it would be difficult to advocate radium in preference, because experience shows that adenocarcinomas vary considerably in radio-resistance and in their response to radiation, and so, unfortunately, the result which may be anticipated with radium in any given case cannot be predicted.

The ultimate result as regards function of the rectum after irradiation of a growth varies according to the degree of fibrosis which results, and whether a fibrous stricture follows or not. The smaller the growth dealt with the better the prognosis as regards stenosis. Small growths can be destroyed with little or no deformity of the lumen. The degree of fibrosis depends also on variations in reaction. An overdose may cause necrosis and excessive fibrosis with resultant stricture, but a correct dose may secure a perfect anatomical result. When this happens, new epithelium grows over the irradiated area, and it may be difficult on digital examination to recognize any abnormality of the lumen beyond a slight projecting ridge.

Alterations in the lumen of the rectum result from local resections, and fibrous strictures are very liable to follow, unless great care is exercised in avoiding sepsis during healing, and unless any tendency to stricture is checked by careful dilatation during convalescence. Thus, if a local resection is preferred to treatment by radiation, it is not certain that a permanent colostomy can be avoided.

When the operative risks of radical excision as distinct from local resections are considered, especially in cases where the risks are above the average, the arguments in favour of radium are more worthy of consideration. If adenocarcinomas, like squamous-celled carcinoma of the tongue, can be graded, as they have been by Broders, into radio-sensitive and radio-resistant, the arguments in favour of radium in selected cases may be enhanced.

Furthermore, if research should reveal some method of sensitization which can be relied on, there will be a wider field for the use of radium in preference to surgery. At the present time the number of cases dealt with in this class does not justify a too dogmatic opinion. The result in any given case depends on the delivery of an optimum dose, which is dependent on the correct amount of radium, the correct distribution, the correct filtration, and correct time of exposure.

Several unexpected failures have been encountered in the irradiation of early growths. Fortunately, in most instances, these failures can and have been made good by radical surgery, but unless it can be shown that preoperative radiation increases immunity against recurrence, patients so treated may have cause for complaint. Until a much larger series of early cases comes under review it is reasonable to assume that unexpected failures (such as two apparently similar growths treated on supposed identical lines, responding in one case well, in the other badly) may be explained in part by some error in technique, and not entirely by variation in radio-resistance.

TREATMENT OF AN OPERABLE GROWTH.

A small operable growth in the rectum below the peritoneal reflection and clear of the anal canal can, if it involves the anterior or lateral wall in the female, be attacked through the vagina. In the male the best approach is from behind, after removal of the coccyx. The rectum can be mobilized, so that the growth becomes accessible whether posterior, lateral, or anterior. The same approach is employed for the female if the growth is posterior. If the growth, though small, has commenced to ulcerate there is a risk of lymphatic spread; whether

*Read in opening a discussion in the Section of Surgery at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

the posterior or vaginal route is employed the retrorectal space should be radiated.

If a very small growth is encountered and found to be malignant, and the mobility of the growth is such that it can be freely mobilized from the muscular wall, it may be treated with some confidence by the introduction of intrarectal seeds without surgical exposure and without glandular attack. Nevertheless, local resection without colostomy offers in all probability a more certain cure.

During the past five and a half years, up to the end of June, I have treated 121 cases of cancer of the rectum with radium. The majority of these have been regarded as inoperable, but lest it should be supposed that radium has been preferred to surgery, when surgery was indicated, it may be mentioned that over sixty cases have been submitted to radical surgery during the same period, and a considerable number have been submitted to colostomy only, owing to the presence of secondary visceral deposits.

A few quite small early carcinomas have been treated by intrarectal seeds, or by vaginal irradiation with needles, with complete success, and without colostomy. Others, more advanced but still operable, have been apparently cured either by a posterior barrage or by vaginal irradiation, or a combination of the two, some with a preliminary colostomy and others without.

On the other hand, as already stated, some of the operable cases which seemed to offer every prospect of cure have responded indifferently, and have been submitted to excision at a later date. Undoubtedly, some adenocarcinomas are more resistant than others. The rapidly growing adenocarcinoma in a young person is more radio-sensitive than a slow-growing growth in an elderly patient, and is also more liable to recur after resolution.

The number of cases definitely regarded as operable which have been submitted to radiation is too small, and the length of time that these have been under observation is too short to enable me to form any very definite opinion as to end-results. Excellent results have to be set off against unexpected failures, and at the present time it seems impossible to predict the immediate result in any given case. Even in those patients who remain well without colostomies, and with apparently healthy rectums, the question of future recurrence is still *sub judice*, and on a less secure foundation in all probability than after a local resection.

Difficulties.

The obstacles to efficient irradiation are:

1. *Anatomical Difficulties.*—In the case of the tongue or breast it is comparatively easy to secure a complete barrage of the growth; the outlines are visible, and the lymphatic areas are reasonably accessible. In the case of the rectum, unless the growth is small and low down, there are great obstacles to a complete barrage both of the growth and of the lines of lymphatic spread.

2. *Radio-resistance.*—Experience seems to indicate that columnar-celled carcinoma is more radio-resistant than other types. Anatomical difficulties are no doubt responsible in some measure for the failures recorded and for the unfavourable views which are held on the radio-resistance of this type of growth. My experience leads me to believe that the dosage required to secure complete retrogression of columnar-celled carcinoma is very near the margin of tolerance of the healthy tissues. Consequently radium burns are difficult to avoid and beta-radiation must be reduced to a minimum.

Filtration.

Most of my work has been done with filtrations of 0.5 or 0.6 mm. platinum. Recently I have been using 0.8 mm. in some cases, and I intend, when an increased supply is available, to use only this filtration for rectal carcinomas for the present. If necrosis results, perforation of the rectal wall and sepsis are liable to follow, and even if a cure follows, the period of convalescence is a very long one. By increasing the filtration so that all primary beta rays are excluded, it is possible to employ a much larger dose of radium than with either 0.5 or 0.6 mm. filtration without risk of necrosis.

I like to leave the radium in for ten days in the hope that every cancer cell will be exposed to radiation of a constant intensity during a period of mitosis. Uniform intensity cannot be obtained with radon; this is a great disadvantage in the use of seeds, which in other respects have so many technical advantages.

Effect of Chronic Sepsis.

It sometimes happens that an operable growth which has been treated without a colostomy retrogresses up to a point and then appears to remain stationary owing to chronic sepsis. This is illustrated by the case of a woman with a growth on the anterior wall of the rectum treated at St. Mark's by vaginal irradiation without colostomy. Response was inadequate, and a second treatment was carried out by vaginal irradiation both with needles and with intrarectal seeds two months later. No apparent appreciable change followed after three months, and I excised the rectum. Dr. Dukes reported that in his opinion the case would have been completely cured if it had been left a little longer, because there was practically no carcinoma active and the few carcinoma cells found were disintegrating. The general microscopic characters were those of a chronic inflammatory ulcer. Before treatment a section showed that the growth was a typical adenocarcinoma. It is probable that this case would have been cured with radium in reasonable time if a colostomy had been done in the first instance.

Reaction of Rectal Growths to Radium.

One of the disadvantages of radium treatment combined with surgery consists in the length of time (often two months and more) which these growths usually take to retrogress and disappear. While evidence of growth remains, there is uncertainty as to the end-result. When all visible growth has gone, a varying amount of fibrosis remains. Uncertainty as to whether any growth remains in the interstices of these fibrous nodules cannot be avoided.

Further, when operative exposure from behind has been the method employed, the wound usually takes as long to heal or longer as compared with a radical excision. A long operative convalescence can be patiently endured if the prospect of cure is assured, but not so if the prospect remains uncertain throughout.

For the early accessible growth there is much to be said for vaginal or intrarectal (or perirectal) irradiation without surgical exposure. If this fails, surgery can follow without delay. Healing is not inhibited after irradiation, provided that the interval between irradiation and operation is not long enough to allow marked fibrosis and consequent diminution of blood supply.

It seems impossible to avoid the conclusion that with the experience available the results which may be anticipated are too uncertain to justify preference for radium to surgery *for the operable case* involving the perineal portion of the rectum (exclusive of anal carcinoma), unless surgery is refused or contraindicated on general grounds.

The operable cases which have been considered so far are the early carcinomas situated below the peritoneal reflection which are easily accessible to interstitial irradiation on the one hand and to local excision on the other.

Two other classes of operable growths remain for consideration: (1) Those which are above the peritoneal reflection and must, if treated surgically, be submitted either to perineal or to abdomino-perineal excision with colostomy, or, if treated with radium, cannot be satisfactorily dealt with except by transperitoneal attack. (2) Operable cases of squamous-celled carcinoma of the anus.

Supraperitoneal Growths.

During the past three years I have employed radium (both needles and seeds) by the transperitoneal route: (*a*) to barrage the upward line of lymphatic spread along the inferior mesenteric vessels at the same time as colostomy is performed as a preliminary to radical excision; (*b*) to attack the fixed inoperable growth which is situated above the peritoneal reflection, or to deal with the upper part of a growth which lies partly above and partly below

the peritoneum; (*c*) to attack an *operable* growth above the peritoneum in a patient who is considered too old or too unfit to stand an abdomino-perineal excision, and whose growth is too high for perineal excision.

Transperitoneal irradiation is a far more risky procedure than perineal irradiation. Radium causes a variable amount of inflammation of the peritoneum, often with effusion of fluid in the area attacked, and if this area is not protected from the small gut and drained there is a risk of paralytic ileus and general peritonitis, or of adhesions. Further, if the lumen of the bowel is penetrated by a needle and a track is established between the lumen and the peritoneal cavity as the result of radium necrosis, there is a considerable risk of general peritonitis.

Experience has shown that the use of radon seeds within the abdomen causes much less disturbance to the peritoneum than radium needles, and is a safer procedure, but so far the end-results have not been so encouraging. In my experience this observation applies to most other regions treated with radon. The radon seeds can be left *in situ*, and have not apparently caused any harm. The removal of the needles often calls for a second anaesthetic.

(*a*) The use of radium within the abdomen as an adjunct to radical surgery seems rational, but it is not possible at the present time to assess its value. When colostomy is performed as a preliminary to perineal excision, the liver, meso-rectum, meso-sigmoid, and iliac regions are first examined. When no glands are detected and the growth is freely movable and obviously an early one, radium is not used. If glands are palpable, radon seeds are inserted along the meso-rectum beside the glands. If no glands are felt, but the growth is more advanced, though considered operable—that is, a borderline case—the mesentery is barraged. Seeds containing 1 millicurie, filtered with 0.5 mm. of platinum, are usually employed within the peritoneum and are not removed. A certain amount of plastic inflammation follows, and radium (or radon) should not be used if an abdomino-perineal or an abdominal resection is contemplated afterwards.

(*b*) The use of radium within the abdomen to attack a growth in the upper part of the rectum or the lower portion of the sigmoid when the growth is regarded as inoperable is certainly justified, if only by one excellent result in which a growth attached to the bladder and fixed to the sacrum was successfully treated with radium needles. This patient remains well and free from all symptoms nearly three years after treatment. His bowels act normally; no growth is visible; he has no colostomy. Several similar cases have been helped enormously and the lives of these patients undoubtedly prolonged by the use of radium combined with colostomy. In some of these cases the growth does not completely retrogress but becomes quiescent, and the patient gains in weight, improves in general health, and is personally much impressed with the benefits received.

(*c*) The cases treated by transperitoneal radiation and regarded as operable (*qua* the growth) have been, with one exception, regarded as too old or too unfit for radical surgery. None of these has been under observation long enough or shown sufficient evidence of retrogression to suggest a cure.

Squamous-celled Carcinoma of the Anus.

This condition stands on a somewhat different footing to adenocarcinoma of the rectum. Early cases which have not infiltrated deeply into the ischio-rectal fossa, surrounded the anus, or invaded the inguinal glands, can, I think, be promised an immediate initial cure with interstitial radiation, combined, in some instances, with surface radiation. The question of permanent cure cannot yet be answered. So far results in these cases have been excellent, with one exception, in which recurrence followed an apparent cure. This was the first case of the kind treated (1925). Recurrence occurred wide of the original growth, and it is probable that the periphery of the growth was inadequately irradiated.

There are distinct advantages in the use of radium in these cases over surgical excision. Radical removal of an anal growth involves removal of the sphincters and a colostomy, whereas with radium, in most early cases, complete restoration of rectal function can be secured and a colostomy avoided. I can state with confidence that a squamous-celled growth involving the anal canal should be treated with radium in preference to surgery, at any rate in the first instance.

THE INOPERABLE CASE.

Individual standards as to operability vary, so that the borderline case cannot be defined, but there is general agreement in defining the advanced inoperable case—the large fixed annular growth which has infiltrated through the rectal wall in all directions.

How far can these cases be helped with radium? We all recognize that in the absence of liver metastasis both the general and the local condition of the patient improve in the majority of cases after a colostomy has been performed. If colostomy is followed by irradiation, it may not always be easy to say whether the improvement is the result of irradiation or colostomy, or both. My experience has shown, even in cases which have been submitted to colostomy some time previously, that rapid and marked general improvement follows irradiation, even in the absence of any marked local changes. In a small percentage of these cases the growth ceases to be active, and if it has been effectively barraged it is destroyed and transformed into a fibrous stricture. In one such case the patient remains well and free from evidence of growth four years after radiation.

The outstanding problem is to secure adequate and uniform radiation. To effect this a combination of methods is often necessary, and frequently more than one treatment is required.

At the time of colostomy, if the growth extends above the peritoneal reflection, it is essential to treat this portion from the abdomen either with radon seeds or with radium needles; the former is safer, and the latter I think more efficient. The meso-rectum is treated at the same time. Subsequently, if the growth is also infraperitoneal, this portion is dealt with in a variety of ways, according to the extent and situation of the growth, either by posterior barrage, vaginal irradiation, intrarectal seeds, or by a combination of these methods, sometimes with the assistance of the intrarectal tube.

Very large and advanced growths should not be dealt with by the posterior open operation. The risks of perforation and secondary sepsis are considerable, and the prospects of cure too remote. These cases often get great relief from perirectal and intrarectal attack. I have described these methods fully elsewhere.[2]

One example of combined treatment may be cited.

A masseur, aged 36, came under observation in October, 1928, with a very large annular cauliflower growth, which was mainly infraperitoneal and completely filled the rectum. It was evident that growth had been very rapid. The patient had quickly lost weight and looked very ill. Colostomy was performed and abdominal irradiation with needles was applied to the upper portion of the growth; three weeks later perirectal radium needles and intrarectal seeds were used, the total dose of the combined treatment being 11,000 odd mg. hours. Ten weeks later the anterior portion of the growth was given another 4,000 mg. hours with seeds introduced through the skin.

At the present time, more than 18 months after treatment, the patient is remarkably well, having gained several stone in weight. The rectum is extensively fibrosed, and it is not possible to say if any growth remains.

The prognosis of a rapidly growing cauliflower growth in a man of 36 is extremely bad, and I am certain that this patient would not be alive and well to-day without radium.

Conversion of Inoperable into Operable Growth.

In several instances an inoperable case has been treated with radium with such marked improvement that a radical excision has been carried out subsequently. I may mention two cases in which a perforation through the posterior vaginal wall was present at the time of irradiation. In both cases the perforation healed, the growth becoming smaller and less fixed. Both patients are in good health after excision, and one has survived four years.

THE BORDERLINE CASE.

In view of these experiences it would seem that the borderline case—that is, the doubtful case as regards radical operation—provides a useful, perhaps the most useful, field for irradiation. A cure may result from irradiation, or the local condition may be so improved that radical surgery becomes possible.

RECURRENCE FOLLOWING RADIATION.

In all branches of surgical irradiation it happens, unfortunately, that cases of apparent cure relapse, or that a tumour shrinks to small proportions and then resumes active growth. Such results no doubt will become less frequent with increased experience. So far as my own experience goes, a recurrence is more likely to follow the use of radon seeds than needles; it is probable that the diminishing intensity of radon, as opposed to the constant intensity of radium, is the causal factor. It may be possible to overcome the factor of diminishing intensity by reinforcement—that is, by adding additional radon seeds at short intervals, which can be done in certain situations, especially when general anaesthesia is not required. Another method is to combine intrarectal seeds with perirectal needles, a method which minimizes the loss of intensity, though it does not give a uniform intensity. In several instances, when retrogression of the tumour has appeared to be complete (or nearly so) and recrudescence has followed, irradiation has been repeated (in a few cases more than once), but in most instances the result has not been very satisfactory.

Without doubt, primary irradiation increases radioresistance to secondary radiation. Relapses following apparent success become more noticeable as the number of cases increases. It is evident that if we are to make further advance we must improve technique and explore the possibilities of radium in combination with *x* rays, lead selenide, etc., more fully.

CONCLUSIONS.

1. In young people, in increasing ratio from the age of 40 downwards, rectal carcinomas grow rapidly, metastasis occurs early, and the end-results of radical surgery are not good. An actively growing carcinoma in a young subject responds well to radium, and far better than a slow-growing carcinoma in an elderly subject. End-results in comparison with surgery are not available.

2. If a growth is adequately barraged with radium and shows little evidence of retrogression after two months, it is probably useless to repeat irradiation. On the other hand, if the growth responds to radium and readily retrogresses, though it fails to disappear completely, further irradiation is indicated on the ground that the dose has been insufficient in respect of amount, time, or distribution.

3. Secondary irradiations are less likely to produce a good final result than an adequate primary irradiation, and are more prone to produce pain of a neuralgic type, which may be very severe and last for long periods.

4. When the growth has been exposed by open operation, an overdose may result in perforation of the bowel with secondary sepsis, and when healing takes place be followed by excessive fibrosis and consequent stricture.

5. The criteria of a correct dose are absence of sepsis, a well-marked radium film, rapid resolution of growth, restoration of normal epithelium, and limited fibrosis.

6. Radon is less efficient than radium, but is valuable within the abdomen and within the lumen of the rectum.

7. Apart from the possibilities of cure, radium has its value in improving both the local and the general condition of an inoperable case, so that in some instances operation with prospect of a cure becomes possible. In cases of local recurrence it is an asset of great value, especially if the recurrence is treated early. It gives hope to those who are beyond surgical help, and in moderate doses has a remarkable tonic effect on the general health.

8. For epithelioma of the anus radium is in all probability more efficient than surgery.

9. The treatment of cancer of the rectum with radium is still in the nursery stage. Time will show whether selection, combined with increased experience and skill, will vastly improve results in radium therapy, or will reveal that radium is too capricious a master and too seldom a servant to be reckoned with as a serious fighting factor in the campaign against cancer.

Research on radio-resistance and methods of sensitization is an urgent need. It is not enough to say: "Here is a cancer of the rectum; let us excise it or let us use radium." We must have an index of sensitivity and a corresponding dose index, and we must develop a technique that allows no uncertainty in the application of the indicated dose. For help on these lines we must look to the physicist, the biochemist, and the pathologist.

When we consider how long it has taken to develop the high technical standard which now exists in abdominal surgery—so high that Lord Moynihan has said we can hardly hope to advance it much further—we ought not to be downhearted. Medicine in recent years has advanced by leaps and bounds because the biochemist has come to the aid of the physician. Is it too much to hope that the "big five"—medicine, surgery, pathology, biochemistry, and physics—will by team work enable the radium worker to conduct his practice on a strictly scientific basis rather than empirically?

We must not be blind to the fact, however, that radium is no panacea for cancer. It has very definite limitations, which need emphasizing. We know that brilliant results can be secured with radium in a small percentage of cases. Can we doubt that further research, increased experience, better technique, and greater skill will reduce the failures and add to the successes?

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RADIUM AND SURGERY IN CANCER OF THE TONGUE.*

BY

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CANCER of the tongue embraces one of the largest groups of epidermoid carcinoma. For the purpose of discussing this common form of tumour process it may well be taken as illustrative of practically all types.

Anatomically, growths of the tongue range from the most superficial papillary outgrowing processes to the deeply infiltrating neoplasm, with little by way of surface manifestation to call attention to it before it is entirely out of bounds. Depending upon the location, it may be most accessible or it may be practically impossible of technical approach. When cancer is superimposed upon chronic inflammatory processes, notably leucoplakia, luetic glossitis, or both, the anatomical changes may be such as to alter the normal course and type of growth, and to present added complications from the therapeutic standpoint as well.

Practically every histological type of epidermoid carcinoma is encountered in the tongue, from the papillary squamous-cell growth to the invasive infiltrating tumour of like cellular structure, and from the fully differentiated adult type to the totally anaplastic transitional cell structure. Tongue cancer is influenced by all of the various factors of dental and oral hygiene. The chronic irritation of irregular teeth or dentures is a well-recognized contributory cause in the development of lingual growths. The bacterial flora of the ill-kept mouth exerts a profound influence on the otherwise normal course of a growth, if, indeed, it does not actually contribute towards its development.

There is a consensus of opinion that tongue cancer affords an average cross-section of therapeutic results in comparison with intra-oral cancer in general. It is the purpose of this communication to emphasize particularly two points: (1) the combined use of radiation and operative surgery offers several advantages in the treatment of

* Read in the Section of Surgery at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

epidermoid carcinoma in general; (2) the treatment of epidermoid carcinoma is steadily approaching a more reasonable, accurate, and efficient basis.

At this stage in the development of radiation therapy it is but natural to expect that many conservative surgeons, and some sceptics, will have none of it. At the other end of the scale are the extreme radiation therapists, eager to cure all cancer by irradiation. Radiation therapy has established a place for itself beyond question. However, it has never been considered the ideal specific cure for all cancer. The surgical efforts towards the relief of cancer have fallen short, yet they have not been futile by any means. It is unfortunate that more attention has not been directed towards combining the best from each method for the ultimate good of the cancer sufferer.

Histological study of the relative degrees of cellular differentiation or potential malignancy of tumour processes has been most enlightening from the therapeutic standpoint. It shows very clearly the chief reason for surgical failure in many instances, and at the same time explains some of the most spectacular reactions to irradiation. The undifferentiated growth, highly malignant, prone to early and widespread dissemination through both lymphatics and blood stream, is obviously a poor surgical risk. On the other hand, it is highly radio-sensitive. The fully differentiated tumour process is more orderly in its development. Metastasis occurs, as a rule, later in the course of the disease, and even then tends to remain within a limited area. In such cases it is but reasonable to expect relatively better results from operative measures. The more adult the growth the more radio-resistant it becomes. The reaction to irradiation is not nearly so spectacular, and yet, if the process be controlled by this means, the assurance of permanency of the result is much greater.

The application of these observations on relative radio-sensitivity based on the degree of cellular differentiation of the tumour process is of tremendous practical importance. It not only aids in determining the treatment method of choice, but, if that method be irradiation, it serves as a guide to the necessary intensity of dosage.

The work of Martin and Quimby at the Memorial Hospital, on the estimation of relative dosage intensities for different types of epidermoid carcinoma, gives a practical basis for dosage estimations. They have shown that adult epidermoid carcinoma requires from seven to ten skin erythema doses throughout the tumour-bearing area to produce complete and permanent control of growth. The anaplastic growths, on the other hand, respond completely to a dosage range of three, or slightly under, to five or six skin erythemas, depending upon the relative degree of differentiation.

The dosage intensity judged necessary in a given case governs, in turn, the technical methods employed to provide that dosage. The most that can be delivered by external irradiation—radium, x rays, or both—to the midline of the oral cavity within a treatment interval of two to four weeks and consistent with safety on the part of the patient, is two and a half to three skin erythema doses. External irradiation, therefore, is capable of causing complete regression of only the most radio-sensitive growths of the tongue. Growths showing any degree of cellular differentiation must have their irradiation intensity increased by some means, in addition to the maximum of external irradiation. Interstitial irradiation must be employed. Epidermoid carcinoma lends itself more readily to histological "grading" than some other types of malignant processes. The distinctions are more clear-cut and better defined. This, together with the fact that the initial dosage intensity studies were carried out in the same group, places epidermoid cancer therapy in the forefront, at least from the standpoint of accuracy.

The problem of tongue cancer, which was regarded a few years ago as very fully understood clinically and pathologically, and dependent for cure on improved technical operative measures, now stands in an entirely different light. The relative radio-sensitivity is the guide to selection of the treatment procedures, as well as to the prognosis. Irradiation is assuming a degree of accuracy and exactness comparable to a nicely adjusted surgical procedure, rather than following on in the empiric channels of the earlier radiation therapy.

In short, the treatment of tongue cancer is not a matter of following a standard technical procedure adopted as a group problem. It is a special problem in each individual case, one following certain broad principles, but in detail guided by the steadily increasing fund of new information now coming to us.

Inasmuch as treatment detail is based largely on histology of growth, it is essential that a biopsy be done early and in all cases. The theoretical objections to this procedure are overridden by the advantages of the information obtained. If done with care, the trauma is negligible. A small piece of tissue a few millimetres in diameter, if carefully selected and removed without tearing or crushing, is sufficient. A clinically cured case is of no value, except to the one who has treated it, unless substantiated by a positive section. The Wassermann reaction is of interest and of some practical value. Cancer, in the presence of a positive blood complement fixation, reacts better if moderate antiluetic treatment is employed. All too frequently, however, the matter of diagnosis is closed with the positive Wassermann reaction, and cancer is ignored until it is beyond control. Altogether, the Wassermann reaction has been more of a curse than a benefit to cancer therapy.

Before any aggressive treatment is undertaken in tongue cancer, rigid oral hygienic measures should be constituted. Local sepsis not only depletes the patient's general condition and contributes to local necrosis, but it nullifies to a great extent the normal reaction to irradiation. In fact, irradiation in the presence of any marked degree of local mixed infection is of questionable value. Infected and jagged teeth should be removed unless encroached upon very closely by active tumour tissue. Cleansing methods should be aggressive and efficient, but irritating solutions should be carefully avoided.

The last published report on tongue cancer from the head and neck department of the Memorial Hospital was presented to the First International Congress of Radiology in London in 1925, and was published in the *British Journal of Radiology* in March, 1925. Since that time we have adhered to the same principle of treatment as outlined in that report, with the various improvements incidental to further experience, additional technical facility, and more efficient equipment.

Radium emanation, or radon, in gold capillary seeds, with a filtration of 0.3 mm. gold, has been used for interstitial implantation since early in 1925. External irradiation of greater intensity than formerly employed is being used as a routine in all cases. For the past three and a half years our equipment for external irradiation has been augmented by a four-gram radium element pack. The combination of treatment measures is coming more and more to be guided by the histological interpretation of the tumour. Dosage intensity is better understood, and has been made applicable practically to the routine work. The indications for neck dissection are gradually being limited, so that dissection is restricted to a relatively smaller group of cases. Most gratifying of all is the steady increase in co-operation and contact between pathologist, physicist, and clinician. The complexities of the problem demand the concerted efforts of a group of workers.

In the treatment of cancer of the tongue we depend upon irradiation entirely for direct complete control—or growth restraint only if palliation is aimed at—of tumour tissue in all circumstances, except in the operable metastatic cervical nodes of fully differentiated carcinoma. In these removal by complete surgical dissection is further restricted if the primary growth is not controlled, or if the metastatic involvement is bilateral.

All cases accepted for treatment receive, as an initial procedure, external irradiation of maximum intensity during the first two weeks. This is directed through both sides of the neck, and includes within the field of irradiation the site of primary growth as well. Immediately following this, gold seeds of radon—individual value about 2 millicuries each—are inserted into the base of and round about the primary growth. The dose is determined on the

basis of radio-sensitivity of the growth and the established dosage intensity experience previously referred to. It is regarded as safer to withhold the implantation until the external irradiation has been completed, or nearly so. The growth is smaller and better defined.

Necrosis of tissue rarely occurs, except in the presence of uncontrolled local infection. If the growth be bulky, fungating, and markedly infected, the implantation of radon is followed in a few days by cautery removal of the condemned area. By utilizing the tumour as a radium holder the entire tumour bed is heavily and uniformly irradiated. It is therefore a safer subsequent operative field. By increasing the total strength of implanted radon to compensate for the subsequent sacrifice of the unused portion, the surgical removal may be done before all of the emanation is exhausted. It is sometimes simpler to do it this way before the anatomical limits have been obscured by radium inflammation. The area removed is only that which might otherwise break down. It is not extended to a wide surgical removal, since responsibility for direct control of growth has been placed with the radium. The removal is to promote surgical cleanliness only. Pain is thus relieved, more rapid healing encouraged, and a minimum of deformity produced.

Secondary invasion of bone by growth, infection in bone, or devitalized bone caused by irradiation calls for surgical removal. At times the after-care of tumours at the base of the tongue may be facilitated by removal of a segment adjacent to the lower pole of the tonsil, and, of course, after the irradiation has been completed.

New growths at the base of the tongue are deserving of special mention. The hopelessness of dealing with these surgically has always been considered due to technical difficulties. Study of their histology would indicate that it has been due largely to their lack of differentiation. Practically all of the anaplastic tongue growths have their origin in or closely associated with the area of the lingual tonsil. The transitional cell carcinoma was first recognized from this location. Like all growths arising in intimate association with the lymphoid tissue of the pharyngeal ring, they exhibit a degree of radio-sensitivity almost out of keeping even with their degree of histological cellular differentiation. This explains the occasional complete regression of what has always been regarded as a particularly hopeless type of growth under the influence of external irradiation only. The relative curability of lingual cancer in the other locations—tip, dorsum, and lateral border—is very largely dependent on the anatomical character of the growth, together with the ease of difficulty of technical access.

Carcinoma developing in a tongue which is the seat of a generalized luetic glossitis follows a course clinically different from the same histological type under normal conditions of tumour bed. The rate of growth is slow; it is particularly radio-resistant; the tendency is towards multiple lesions probably because the site predisposes to malignant involvement. Because of the limited blood supply and the increased fibrosis, secondary necrosis under heavy irradiation is common. It frequently calls for a limited surgical removal following interstitial irradiation. When it becomes necessary to remove tissue from the tongue, as just outlined, an ordinary electro-thermic cautery—heavily constructed so that it will maintain a uniform degree of heat without intermittent cooling, and with a flat blade which permits of excising the condemned area of tissue rather than simply burning it out—is employed.

We have gone through the experiences with the various equipments for coagulation of tissues by means of currents of a high rate of oscillation. These procedures take their place in the cautery field, and whether they or the old-fashioned cautery methods are employed is a matter of personal preference. The very admirable article by Mr. W. Douglas Harmer on the use of the high-frequency cautery in the issue of the *British Journal of Surgery* for April, 1928, is a most reasonable presentation of this method. It is doubtful, however, if it quite fulfils all that can be accomplished at present in the treatment of mouth cancer, and it is possible that the psychological appeal of such equipment, in some quarters at least, may obscure certain fundamental principles of cancer therapy which to-day are fairly well recognized.

Treatment of the Neck.

The treatment of metastasis in the cervical lymph nodes is probably of greater importance than that of the primary growth. Our method of dealing with the neck is based on the premise that the cervical lymph nodes perform a conservative function, up to a certain point at least. The protective reactions within the lymph nodes as observed histologically are well known, and further observations on irradiated normal lymph nodes strongly suggest that this reaction is amplified under the stimulus of radiation. Whatever may be said of the various glandular types of cancer, it is fairly well established that metastatic extension of epidermoid carcinoma is by embolism.

When a metastatic deposit makes itself evident it is usually in one lymph node only, or at most confined to one or two adjacent nodes. Widespread involvement with multiple nodes involved rarely occurs until very late in the course of the disease. We believe that in the early stages, with a single palpably enlarged node, the capsule of which is intact, the disease can be dealt with quite as efficiently as is possible by doing a dissection before the node becomes palpable. In other words, routine block dissection of the neck is not practised.

All necks are treated by means of heavily filtered external radiation of maximum intensity consistent with tissue tolerance, and from both sides, as previously mentioned in discussing the primary lesion. For economic reasons heavily filtered high-voltage x-radiation is used as a routine measure. By preference heavily filtered radium would be used. Clinical observations suggest that radium is preferable to x-radiation. It is only since having at our disposal a four-gram radium element pack, however, that it has been possible to carry out this type of radium radiation with maximum efficiency, and that only in the more favourable cases. Unless the actual quantity of radium utilized in this manner is equivalent to the quantity of x-radiation, then it is preferable to use x-radiation. A good dose of x rays is always better than a poor dose of radium.

For some time clinical observations seemed to indicate that x-radiation and heavily filtered radium could be combined for the neck irradiation to advantage in two ways. It was noted that the total quantity of radiation which the skin would tolerate was greater by combining the two than when a comparable quantity of either agent alone was used. The reaction within the tumour-bearing area as observed clinically was superior. Observations by Dr. Ewing on histological preparations of tissues so irradiated have led him to conclude that the effect of x-radiation is more pronounced on the connective tissue element, while radium is more effective on the cellular structure.

Experiments by Quimby and Pack in the Memorial Hospital biophysical laboratories have confirmed the clinical observations on the skin tolerance. There is a difference, dependent apparently on the differences in wave-length, which permit of increasing the total quantity of radiation by combining the two ranges of wave-length. Patients presenting no palpably enlarged metastatic nodes on admission for treatment are subjected to heavy external irradiation and kept under routine observation. If a palpable node of adult type epidermoid carcinoma is present, complete unilateral neck dissection is done under local anaesthesia. All the lymph-node-bearing areas from the chin to the collar-bone, and including the submaxillary salivary gland, the jugular vein, and the sterno-mastoid muscle, are removed through a modified Bastianelli incision. Before the wound is closed filtered radon seeds are implanted at any suspicious points within the wound, particularly where the lymphatic paths are severed. This does not interfere appreciably with the healing of the wound. No post-operative irradiation is employed.

If the metastatic lymph node be inoperable, no attempt is made toward local removal or complete dissection. The surgical exposure is utilized to implant filtered radon seeds throughout the tumour-bearing area, and the wound is then closed. This procedure, with a minimum of trauma to the blood supply of the local area, is preferred to a partial

removal plus radium for the remainder. Any node in which the disease has perforated the capsule is regarded as being inoperable even though it may be small and, from the standpoint of technique, removable in the gross together with the adjacent structures. All necks with bilateral metastatic nodes are regarded as being surgically inoperable, even though they may be quite readily removable technically. Once the disease has involved both sides of the neck it is considered as incurable by many means, except in very rare instances. For the very advanced metastatic nodes external irradiation only, as a palliative measure, is used.

Complete and permanent regression of fully differentiated squamous-cell carcinoma, secondary in the nodes, has not been observed from external irradiation alone. Metastatic nodes from anaplastic epidermoid carcinoma, even though coming within the definition of an operable node, are treated by radium alone. Usually, filtered radon tubes are implanted as well, just as in the treatment of the primary growth in this group, but the backbone of treatment in this type of lesion is external irradiation, and no resort is made to operative surgery for removal. The routine external irradiation of the neck is done within a period of a fortnight.

Unfortunately, from the standpoint of statistics, we continue to treat practically all cases applying at the clinic. There is no selection, except to decline acceptance of those equal to nursing care only. From a humane standpoint it has been necessary to do this, and, on the other hand, it has always been the feeling that observation of all stages of the disease is of value. Such a policy, however, precludes a satisfactory comparison of statistics with radiological clinics where selection is practised, or with surgical clinics where none but operative methods are employed.

Our reports on tongue cancer, made at the Second International Congress of Radiology in Stockholm in July, 1928, covered a group of 473 histologically verified and clinically *unselected* cases treated during the period from January 1st, 1917, to December 31st, 1927. The survivors in this group have been rechecked to December 31st, 1929.

The percentages of freedom from clinical evidence of disease are as follows:

	Cases.	Percentage.
Tip of tongue	6	40
Dorsum of tongue	10	17
Lateral border of tongue	54	19
Base of tongue	13	11
Recurrent...	4	17

Of the total group, 97, or 20 per cent., are alive and living active lives. Of these, 87, or 18 per cent., present no clinical evidence of disease.

The intervals of freedom from disease are as follows: 39 cases, five to twelve years; 24 cases, three to five years; 24 cases, two to three years.

Of the entire group, 69 per cent. are known to be dead. A number of these patients died of intercurrent disease, and while free from clinical evidence of cancer; 19 lived five years or over; 19 lived three to five years; 113 lived one to three years; while 179 died within one year.

In the group showing no evidence of metastatic involvement of nodes throughout—189 patients—66 have now no evidence of disease. The group of 161 patients with gross evidence of lymph node involvement on admission shows only 6 "no evidence of disease" now; and of the 103 developing nodes after admission, 12 only have now no evidence of disease.

It is true that all these patients did not die as a result of the metastatic involvement. Many were far advanced in the primary site. In many others the node involvement was hopelessly advanced. The group does not include an appreciable number of our gold tube radon implantation cases. The failure to control these cases with metastatic cervical nodes, however, leaves much to be desired in the treatment of the neck.

In the entire group of 473 cases, the percentages of surgical operability on admission were as follows:

	Percentage.
Tip of tongue	60
Dorsum of tongue	25
Lateral border of tongue...	46
Base of tongue	9

The percentage of freedom from clinical evidence of disease in the entire group of unselected cases—18 per cent.—is regarded as comparing favourably with the average of operative surgical statistics in the group of operable cases alone.

SUMMARY.

1. At the Memorial Hospital radium is the agent of choice for treatment of the primary growth in cancer of the tongue.

2. *X*-radiation is a necessary complement to the treatment of all cases of lingual cancer unless replaced by the use of very large amounts of radon for external application.

3. Radium must not be depended upon entirely, and in all cases, to the exclusion of other associated measures.

4. Operative surgery is indicated in the mouth for access, drainage, and in dealing with disease in bone.

5. Operative surgery is indicated in the neck in early definite involvement of adult epidermoid carcinoma, in addition to irradiation.

6. Surgical exposure in the neck, plus filtered radon implantation, is indicated in a variety of metastatic conditions other than the group operable by complete dissection.

7. The selection of technical methods and the guide to irradiation intensity is through an appraisal of the relative radio-sensitivity of the growth, as judged by the degree of cellular histological differentiation.

8. The irradiation must be directed with care and precision. The minimum intensity must conform to well-defined standards.

9. The best interests of the patient are served through close co-operation between pathologist, physicist, and clinician.

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RADIUM TREATMENT OF BUCCAL CARCINOMA.

*PRINCIPLES AND SOME RESULTS.**

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REVOLUTIONS in medicine and surgery, as in anything that matters, are rarely successful, but it would appear that the treatment of carcinoma of the mouth and tongue is an exception to the general rule, and that it is extremely improbable that we shall ever revert to the older forms of treatment, at any rate for the primary growth. This surgical revolution, however, is more apparent than real, and takes no account of the painstaking work of the last two decades in radium therapy. It was Dominici—whose death was probably due to excessive exposure to the gamma ray—who drew attention to the importance of filtration in eliminating the direct action of the beta ray and so utilizing the selective action of the gamma ray. Later, Regaud showed that the prolonged action of the gamma rays in relatively weak intensities produced, in the squamous epitheliomata at any rate, a more favourable response than a high intensity for a short time.

During the war small unscreened glass emanation tubes, 5 to 10 millimetres in length and containing 1 to 2 millicuries of emanation, were used extensively in America for buccal carcinoma. These were buried and left permanently in the tissues. A very intense local reaction followed owing to the unrestricted action of the beta rays, but results were good in such patients as survived the ordeal with its distressing and painful complications. It is important to realize that this method embodied the principle of prolonged irradiation, of which Regaud is an advocate. Later, Failla, at the Memorial Hospital, New York, used gold seeds 0.3 mm. in wall thickness filled with emanation, which cut off about 50 per cent. of the beta rays; while,

* A communication to the Section of Surgery at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

still later, Muir invented the removable platinum radon seed. We had used the unscreened seed in Manchester, and an analysis of our cases—when I took over the work from Dr. Arthur Burrows in 1925—revealed that 80 per cent. of our successes with the primary growth had followed this method of treatment. As a result, we began to employ the same method of treatment as Regaud for the primary growth, screening our source with a minimum of 0.5 mm. of platinum, and using as great an active length as possible.

Radium has improved out of all recognition the outlook in buccal carcinoma, and it has, I think, at the same time enriched our knowledge of the disease. The original surgical conception of the disease required the removal of the primary growth, the lymphatic tract to the lymph nodes, and the nodes themselves *en bloc*. The operation thus resembled in conception and execution the radical amputation of the breast as it is still performed, but involved a much higher mortality. It was realized, however, even before radium was seriously considered as a factor in treatment, that cases could be cured by the ablation on separate occasions of the primary growth and the lymph nodes, and radium treatment has conclusively proved that, in buccal carcinoma, metastasis to the lymphatic glands is by embolism.

But radium has done more than this, for the coincident investigations of the histological structure of buccal carcinoma in different parts of the mouth have shown that quite well-marked variations occur with corresponding variation in sensitivity. We know now that almost every carcinoma of the base of the tongue will be of an embryonic, undifferentiated, and radio-sensitive type; that consequently there is a good chance of local cure in almost every case, and that the danger lies in the rapid and widespread metastasis. The only cases I have seen of pulmonary metastases in buccal carcinoma have been of this type. We know that epithelioma of the cheek, lip, floor of the mouth, and anterior third of the tongue are almost invariably of a highly differentiated type, with abundant cell nests. They are radio-sensitive, but less markedly so than the preceding type. Our own observations indicate that practically every case in which the anterior third of the dorsum is affected the condition is superimposed upon a chronic glossitis of syphilitic origin. This interferes with the response to irradiation, and, occasionally, even small lesions do not respond. In such cases it is always advisable to point out that diathermy may have to be used later if radium is unsuccessful. Such cases strengthen the evidence that tissue reaction is an important factor in the effect produced by radium on malignant tumours.

In the middle third of the tongue, on the tonsil and fauces and soft palate, both histological types and also intermediate varieties are found.

It would seem from the above considerations that all squamous epitheliomata of the mouth and tongue are radio-sensitive, some more so than others, and that there is now unanimity of opinion that prolonged irradiation with gamma rays of low intensity yields the best results. The problem, then, should be mainly one of the insertion or application of the radium.

SEEDS OR NEEDLES.

It has always seemed to me that it is infinitely easier to insert a needle of active length, say, 30 mm., than six separate seeds of active length 5 mm., and it becomes the more evident the larger the growth. This is a general opinion in England, where we use needles of active length up to 50 mm. for the treatment of breast carcinoma. I would say unhesitatingly that needles are superior to seeds. There occur some occasional complications from radium treatment which certainly do not follow operative methods, involving necrosis of bone or of the soft tissues. If a lesion involves bone superficially, necrosis is almost inevitable if the disease is to be eradicated, and may be prolonged and distressing. If bone is extensively involved it is doubtful whether the disease will ever be eradicated by radium alone, and in such cases radium treatment of the soft parts combined with surgical excision of the affected bone, if possible, is the better procedure.

No matter how careful and experienced the operator may be, necrosis of the soft tissues sometimes follows. Over-treatment rather than under-treatment should always be our aim, since a second application does not meet with so active a response as the first, except after a long interval of time, when it is probably too late.

In the preceding remarks it has been assumed that the primary growth is treated first. The primary growth must be regarded as a source of embolic infection of the glands, and clinically we know that if the lymphatic flow is blocked by extirpation of the glands on one side of the neck, it is diverted to the opposite side. I have seen several cases which demonstrate this. Radium treatment is a conservative method which, if successful, restores function almost to normal; little need be said as to its advantages over surgery of the tongue. In the cheek, palate, and floor of the mouth little can be seen except slight scarring; in the tongue the same may be said, although slight deviation to the affected side with pointing of the tip to the opposite side is noted in lesions of the middle third. Speaking, eating, and drinking suffer no impairment. Local recurrence is rare after six months, and cases of so-called "recurrence" are those in which the growth has never really disappeared.

THE LYMPHATIC DRAINAGE AREA.

Although most workers are agreed as to the principles of treatment of the primary growth by radium, there is no method of using radium alone which has established itself as the method of choice in the treatment of the lymphatic drainage area. Even with a primary growth confined to one side of the mouth we have to consider the treatment of a wide area bounded in practice by the limits of the anterior and posterior triangles of the neck on the same side, although theoretically, and occasionally in practice, metastasis occurs in the opposite anterior triangle. Needling is a localized method of treatment, and if in the primary growth, which is relatively circumscribed, we are compelled to insert some fifteen needles, we ought to implant at least thirty to forty in the much wider secondary area. In the majority of cases of buccal carcinoma the upper deep cervical, and later the lower deep cervical, groups of glands are invaded, and some of these lie posteriorly to the internal jugular vein. These cannot possibly be dealt with adequately by the insertion of radium needles blindly through the skin, and a thorough exposure of the neck is necessary. Similarly, in order to deal effectively with the glands in the posterior triangle and supraclavicular fossa, the sterno-mastoid muscle should be divided and reflected upwards. I think, therefore, that if all this is necessary for adequate treatment by the implantation of needles, a block dissection might as well be done at the same time, in an operable case. With an experienced operator and a regular assistant the operation is not so formidable as it appears, and I am convinced that it is one of the best surgical operations in malignant disease. The tragedy is that so many block dissections are so only in name.

In an operable case the choice rests between the implantation of needles and some form of external irradiation. It is very doubtful if external irradiation, except in the case of the radio-sensitive types which are found at the base of the tongue, has ever cured a case with fixed secondary deposits in the neck. Our practice in Manchester is to reflect flaps, as in the case of a block dissection of the neck, and divide the sterno-mastoid. Needles are then inserted in the anterior and posterior triangles about 2 cm. apart. They vary according to circumstances in active length between 20 and 50 mm., and are left in position about eight days. Usually thirty to forty needles are required, and the wound has to be reopened under a general anaesthetic for their removal. One should never subordinate the position and direction of the needles to ease of removal.

There is justification, in my experience, for the adoption of a policy of observation if no glands are palpable, provided the patients are seen at least once a month. If means had permitted, these patients would have been subjected to external irradiation by about half a gram of radium at 4 to 7 cm. distance. At the Fondation Curie a routine block dissection is performed, followed by distance irradiation if microscopical deposits are found in the

glands removed. Our own position may be summarized as follows.

1. If no glands are palpable, observation at monthly intervals.

2. If glands are palpable and removable, block dissection, either combined with implantation of radium or followed by external distance irradiation.

3. If the glands are fixed, implantation of a large number of needles, thirty to forty, after thorough exposure of the neck.

THE RESULTS OF TREATMENT.

There are very few figures available for the results of treatment by radium alone.

Berven of Stockholm published in 1928 the results in 22 patients, of whom 13 were alive five years later (59 per cent.). These, however, were "operable" cases, and radium was not the only factor concerned. His practice is to use diathermy, either for excision or coagulation, and to supplement this with the implantation of radium for twenty-four hours. I do not think that these results should be included or compared with those obtained by radium alone. Any surgeon of experience will recognize that it is impossible to deal adequately by diathermy with any growth of the tongue which involves extensively the middle or posterior third. We all recognize that surgery can achieve good results with early growths of the anterior third of the tongue, but having seen what radium can accomplish at all stages of the disease by the technique first advocated by Regaud, with no mutilation and a complete restoration of function, we feel that it has established itself as the method of choice in the first instance.

Regaud's last published results were assessed in December, 1927, and I have abstracted and summarized them in the following table.

	1922.	1923.	1924.	1925.	1926.
Total	33	54	55	60	54
Complete cure	6	10	11	17	21
Percentage	18.18	18.50	20.00	28.33	38.88

This table therefore gives results at one, two, three, four, and five years respectively. It will be observed that if a patient survives for three years he has an almost equal chance of living for two more years.

The methods we employ in Manchester, which are based on those of Regaud, were begun late in 1925, and so far the results have been reviewed only on a three-year basis. They are as follows.

	1926.	1927.	1928.
Total	80	74	113
Complete cure	18	25	51
Percentage	22.50	34.7	45.13

For the same periods of time they are approximately the same as Regaud's, but there are several points to which I should like to draw attention. It has been our custom at the Manchester and District Radium Institute to issue an annual report, and this is in effect an annual process of examination. Although we cannot claim as cures patients treated so recently as three months previously, yet by comparison with the same results year by year we discover whether our immediate results are on the up grade. For the primary site in buccal carcinoma our percentages of "apparent cures" for 1926, 1927, and 1928 were 38.7, 47.3, and 60 respectively, and, where the primary and secondary sites were considered, 27.5, 36, and 45 per cent. respectively. In other words, our immediate results improved each year. Naturally this percentage became lower when the results were reviewed at a later date, although we do not find that recurrences at the primary site are common. I think that this improvement is due chiefly to increased personal experience, and that it is an argument for the treatment of carcinoma of the buccal cavity at centres where special experience exists. Lane-Claypon (Reports on Public Health and Medical Subjects, No. 59) has reviewed the statistical literature. She concludes: "It is probably fair to say that some 25 per cent. of patients operated upon will be alive and well three years after operation and 20 per cent. at five years."

Although the number of cases treated by radium is relatively small, the three- and five-year results are about the same as those obtained by surgery. But the likeness ends there, for the results by radium have been achieved not only in operable, but also in inoperable cases, and with no mutilation to the patient and no impairment of function. We all appreciate the art of surgery, but the selective action of the gamma ray in certain types of malignant disease and, in particular, epidermoid carcinoma of the mouth and tongue with complete restoration of function, must be placed on a higher plane, if degrees there be. The question naturally arises whether we can confidently look forward to improvement in results. I think we can if the following points are considered.

Early diagnosis is essential, the more so because involvement of lymphatic nodes is early and increases the gravity of the prognosis. With the education of the general public, particularly with regard to oral hygiene, I think that as the present generation reaches middle and old age the incidence of oral carcinoma will diminish, and that they will seek advice and treatment at an earlier stage when abnormalities exist. At the present time, in the hospital class of patient, one feels that if the patient will tolerate for many years, as he undoubtedly does, a mouth filled with carious teeth of all shapes and sizes, the presence of an early carcinoma is an unnoticed incident in his daily life. Commonly such a patient with an immobile tongue will give a three weeks' history only!

Secondly, I believe in the concentration of radium treatment at large centres. I know from my own personal experience that results with the same radiological technique improve with experience, and that only from the follow-up of large numbers of cases can faults be corrected. The same remarks, I think, apply equally to the performance of a block dissection, which at present is often an integral part of the treatment of a case of buccal carcinoma. Unless the surgeon has opportunities for the frequent performance of this operation I think the results will be poor. One must always remember that Nature does not help us a great deal, so far as we know, in malignant disease, whereas in the inflammatory diseases she plays a big part.

TREATMENT OF BLADDER TUMOURS BY RADON.*

BY

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ATTEMPTS to evaluate the application of radium to bladder tumours are beset with difficulty. For the purposes of this discussion I will limit myself to an analysis of the case records of thirty-two patients who consulted me for malignant bladder tumours from 1922 to 1930, who were treated by radon, and in whose records the complete results are shown. Diathermy was always employed as a preliminary to prepare the tumour for the seeds. Bare glass seeds were used from 1922 until July, 1926. Since July, 1925, glass seeds screened with 0.3 mm. of platinum were employed. For a knowledge of both these methods I am indebted to the Radium Corporation of New York, and to a study of the work of Keyes, Barringer, and Muir. All the tumours treated were clinically malignant, though the majority were small and of recent origin. Pathological evidence of malignancy continues to prove unsatisfactory. In a number of the cases described below the tumours removed were said by the pathologist to be innocent, yet the patients died of secondary deposits within a short time. The cases were selected for radon treatment mainly for four reasons.

1. Because the patient refused extensive operation, or would only consent to cystoscopic treatment.

2. Because the tumours were in a position badly situated for

* A communication to the Section of Surgery of the Annual Meeting of the British Medical Association, Winnipeg, 1930.

partial cystectomy—that is to say, they lay between the ureter and the internal meatus.

3. Because in the case of pedicled malignant tumours it was hoped that radon would shorten diathermy treatment and make it more secure.

4. Because in the case of some of the sessile tumours it was hoped that cystotomy and radon implantation might prove less difficult and dangerous than partial cystectomy.

TECHNIQUE EMPLOYED.

1. In early favourable cases of pedicled tumour or small early malignant ulcer, particularly in women, I was able to destroy the body and pedicle, or the floor of the tumour, at one sitting under general anaesthesia. To effect this I made use of a special cystoscope which I devised and have described elsewhere[1] (see Fig. 1). (This cystoscope

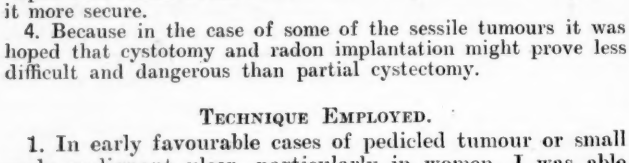

FIG. 1.—Diathermy cystoscope.

has been copied by instrument makers in other countries, sometimes without any acknowledgement.) After such treatment a whitened charred ulcer was left, occupying the site of the tumour. Around this ulcer at appropriate intervals were implanted through a cystoscopic inplanter an appropriate number of radon glass seeds, bare until

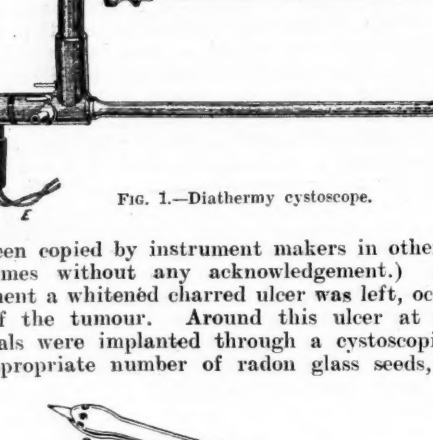

FIG. 3.
Diathermy snare.

FIG. 2.
Suction knife.

July, 1926, after that date screened with 0.3 mm. of platinum, and containing from 1.5 to 2.5 millicuries of radon. These were usually left in position indefinitely, and appeared to give rise to no subsequent trouble. The ulcer would take from six weeks to three months to heal up soundly, but it seemed to heal up with less tendency to severe sepsis in a closed bladder than in an open bladder. Urinary antiseptics were exhibited by the mouth during this period.

2. In more advanced cases with a large, broad-pedicled tumour, and in men rather than in women, the bladder was exposed suprapubically and emptied with a suction knife of my own design (Fig. 2). The opening was enlarged to admit a large-bore porcelain caisson into the open end of which the tumour would slip readily and be thereby cut off from the rest of the wound. A large diathermy snare (Fig. 3) was then introduced round the pedicle, drawn sufficiently tight, and a full diathermy current turned on. The pedicle was burnt through and the top of the tumour at once withdrawn, caught up neatly in the snare. A charred ulcer was left at the site of the pedicle. With a gloved finger in the rectum or vagina, to guard these from damage, the ulcer now received a further dose of diathermy with a flat metal electrode. Finally, the circumference of the ulcer was implanted with threaded screened radon seeds, each containing 1.5 to 2.5 millicuries. The seeds were spaced 2 cm. apart, and one seed was used for each cubic centimetre of growth. To estimate both these measurements I used a metal gauge (Fig. 4). One end has a metal rod 2 cm. long; the other end has a metal cube 1 c.cm. in size. In such cases there was no need to exceed the maximum dose of safety—namely, 2,400 millicurie hours. The gloved finger in the rectum or vagina was kept in place during the implantation of the seeds to assist in guarding those structures and in estimating the size of the root of the tumour. The bladder was stitched

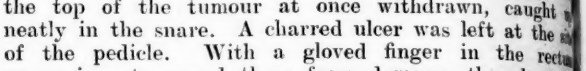

FIG. 4.—Radon gauge.

up round a large tube. The seeds were removed at the end of ten days. Healing was slow, and the wounds had to be kept open for some time to permit the extrusion of sloughs.*

3. In more extensive cases of sessile malignant tumour the bladder was opened widely, the surface of the tumour thoroughly cooked with a large flat button diathermy electrode, and the edges of the tumour surrounded with a ring of threaded radon seeds at appropriate intervals.

RESULTS.

Group 1.—Pedicled Malignant Tumours.

These have thick pedicles, are tough, bald, and not fimbriated; they are often covered with fibrinous plaques and may be associated with mild cystitis. Careful rectal or vaginal examination under anaesthesia may reveal an indefinite small area of thickening in the base of the pedicle, but this is not found in the majority of cases.

Thirteen such cases were treated from August, 1923, to March, 1930—six males and seven females.

Of eight patients treated cystoscopically, two died—one of rapid recurrences probably induced by radon, one of bronchitis. Both patients were over 80 years of age. Radon appeared to irritate, and probably accelerated death in both these cases. Five patients are alive and well without recurrence; in one case seven years, in another six, and in three cases two years have elapsed since the treatment, but in four of these the radon did not cause complete disappearance of the growth, so that they had to have further treatment by diathermy, which was successful. The doses varied from 133 to 999 millicurie hours; there was little trouble with sloughs, apart from a temporary cystitis lasting four to six weeks. One woman, aged 72, had a small pedicled growth, and received a dose of 9[illegible] millicurie hours; five weeks later the growth had greatly increased in size, so that the patient had to be submitted to partial cystectomy—an example of increase in rate of growth induced by radon. The results were: two dead, one alive with recurrence, five alive and well—four of whom needed diathermy to complete their cure. In only one case can radon be said to have been entirely successful.

In five cases treated with cystotomy, diathermy snare and open implantation of radon, doses varied from 666 to 1,332 millicurie hours. Healing in three cases was somewhat painful and tedious until the sloughs came away, but the final healing was good. Five patients are alive and well—in three cases periods of five, four, and two and a half years have elapsed since the operation, and two years

* An excellent rule-scale for calculating the dosage of radon seeds has been devised by Mr. M. V. Mayneord, M.Sc., of the Cancer Hospital, London, and made by Cuthbert Andrews, 47, Red Lion Street, High Holborn, London, W.C.1.

in two cases. In one of these cases a partial cystectomy was performed for the main growth, which was a sessile carcinoma, the radon being applied to three small papillomata round the internal meatus. In four of these five cases radon can be considered to have been successful.

It is in this class of case that radon has appeared to have been most helpful, but even in this class two tumours proved resistant and were irritated into more rapid growth, and in one case death occurred from the irritation and toxaemia produced by the sloughs. It is possible to argue that the diathermy employed in all the cases was sufficient to cure the tumours. One can only give it as a clinical impression that the radon, when it did not irritate, gave additional security against recurrence and shortened the time of treatment.

Of the thirteen patients treated, two died; one had a recurrence; ten are alive and well, but four of these needed diathermy afterwards to complete the cure, and one needed partial cystectomy as well as radon. In only five out of thirteen cases can radon be said to have acted entirely favourably.

Group 2.—Small Early Sessile Malignant Tumours.

These are growths without pedicles, the size of the tumour varying from less than 1 to 3 inches in diameter, some papilliferous, some ulcerating. All could be felt to be infiltrating the base of the bladder.

Fourteen cases treated from December, 1922, to March, 1930, consisted of seven males and seven females.

Patients treated by diathermy and radon cystoscopically numbered four, all females. Three are alive and well, periods of seven and a half years, two years, and four months respectively having elapsed since the treatment. All three tumours were very early and small, but were definitely malignant and infiltrating tumours. One patient died within four months of multiple deep secondary deposits, pyelitis, and uraemia. Here the local growth was small and early, certainly not larger than a threepenny piece. A dose of 999 millicurie hours was given cystoscopically. This is one of the five cases in which I have gained the impression that radon has directly caused early and extensive internal recurrences and has hastened death.

Nine cases were treated by cystotomy, diathermy, and radon implantation—six males and three females. Two fairly extensive cases were definitely cured by radon. Two patients died directly as the result of the treatment. Four died of extensive deep internal recurrences, three within a few months, the recurrences being apparently hastened by the irritation of the radon. In one case (a man weighing 16 stone) the radon cured a fairly extensive tumour of the left side of the bladder, but eighteen months later a fresh tumour appeared in the right kidney, the removal of which led to death from pneumonia.

One patient treated by partial cystectomy for the main tumour, followed by implantation into the fresh site of the tumour, was alive and had no recurrence three and a half years later.

Of the fourteen patients treated, six survived—one seven and a half years, one four and a half years, two three and a half years, one two years, and one six months after operation. Eight died—two as the direct result of the treatment, four from rapid internal recurrences, apparently induced by radon, and two from late internal recurrences. In only six of the fourteen cases could radon be said to have been successful.

It is suggested that radon is more likely than not to be unsuccessful in this class of case. Its application has a high mortality and may irritate the tumour and increase the rate of growth. Its successes in extensive cases appear as rather lucky shots in the dark. I have no doubt in my own mind that I should have obtained better results had I submitted the majority of these cases to partial cystectomy. Only six patients out of fourteen are alive and well, and in only five of these can the result be attributed to radon. In only three cases did radon cause a growth to disappear that was at all extensive. In six cases I have no doubt that radon hastened death. In two cases, however, it appeared definitely to delay for a time the fatal issue.

Group 3.—Sessile Malignant Tumours.

One case, that of a woman with a tumour of the right bladder base, was treated cystoscopically. The tumour completely disappeared as a result of one treatment—a most impressive result. Four and a half years later she developed a carcinoma of the right kidney and ureter, which I removed. She is alive and well, but is likely to suffer from recurrence.

One case, that of a man who for a long time refused operation, was treated by radon, followed by cystectomy. The tumour was healed over for nearly two years, then it recurred deeply. After an almost complete cystectomy the patient was able to return for a time to normal life, but a year after his operation he died of internal recurrences.

One case treated by partial cystectomy with radon implantation into a fresh wound was that of a man who died a week later of uraemia, death being in all probability accelerated by the radon.

Two cases, both males, were treated by cystotomy and radon implantation. One died of exhaustion from sloughing five months later; he would probably have been more comfortable and lived longer if he had been left alone. One survived eighteen months; the growth in his bladder shrank to small dimensions and he was relieved of his bladder symptoms, but he died of deep recurrences.

Of the five patients treated four died; one is alive and well, but likely to develop recurrences.

SUMMARY OF RESULTS.

In twelve out of the eighteen patients still alive radon following diathermy appeared to destroy a bladder tumour, but in only four of these cases was the growth at all extensive. In the other six cases it was unsuccessful. In eleven of the fatal cases radon either caused death directly or appeared to accelerate the progress of the disease. In only three of the fatal cases did it appear to delay the final issue. The chances therefore seemed to be about even as to whether radon would act as a cure or to act as a dangerous irritant. As out of the twelve cases cured by radon a cure might have been obtained in eight had they been submitted to diathermy alone or to excision alone, one wonders whether we are justified in employing radon in bladder tumours except in exceptional cases where the growth is in a difficult position or when the patient refuses other treatment. Once the word "radium" is mentioned in any particular case, the patient knows he has cancer and thinks he is doomed. If radium proves unsuccessful, the state of the case is often rendered more painful and distressing. Nevertheless, it is hoped that increased experience and improved technique may lead to more successful results. Radon must be kept as one of several weapons for attack, and used in the cases where experience teaches us that it is likely to help.

COMMENTARY.

Radium and radon are physical agents that by giving off gamma rays may destroy cancer cells in their immediate neighbourhood, just as the knife, diathermy, or the endotherm needle can destroy cancer cells by cutting them away or by overheating them. Radium at first sight appears to destroy cancer cells with less mutilation than any of these other agents, but the results are often fallacious. The superficial parts of a tumour may disappear, while the underlying portions are left to carry their ravages to deeper structures. One gains the impression that if the deeper portions of a tumour are not destroyed, then it may in certain cases extend more rapidly than if it had not been treated by radium. It is suggested that radon in such cases damages the natural defences of the tissues against cancer cells.

In the case of bladder tumours, if it were possible to know beforehand the exact susceptibility of each individual tumour to gamma rays, and to estimate the exact extent and size of the growth, so as to be able to seed the growth not only superficially but deeply with accurately spaced doses; and if it were possible, which it is not, to exclude secondary beta radiation, and so entirely prevent burning and sloughing; and if it were possible to use very large doses of radium without damaging the neighbouring

organs or the body as a whole, then we should have in radium an ideal agent for dealing with the problem. Unfortunately none of these criteria can be fulfilled with certainty, so that the application of radium tends to be rather a shot in the dark, even in the hands of those who have had considerable experience with it. The unfortunate thing is that if radium is used and it fails, the state of the patient may be more miserable than if it had not been used at all.

Radium has shown such promise in dealing with early cases of cancer of the lip, tongue, and cervix that it was hoped it might be equally helpful in early cancer of the bladder. But it appears that the problem of applying radium in the bladder produces certain effects which may be of grave consequence, effects which are not troublesome when a cancer opens on to the skin, mouth, or vagina. In such situations, if burns or sloughs are produced, there is a free exit for dead or septic material. In the case of the bladder there is no such free exit, even if a large tube is placed in the bladder and kept there for some months.

It seems to be accepted that in the average case a screened seed containing 1.5 millicuries of radon, acting for ten days, can destroy 1 c.cm. of malignant tissue around it. It is to be noted, however, that some tumours are less susceptible than others. At first sight, then, the problem would appear to be a simple one. Estimate the number of cubic centimetres in any given case, and implant a sufficient number of screened seeds at a distance of 2 cm. apart, and you should destroy all the growth. But things do not always work out so simply in practice. The gamma rays stimulate the fibroblasts, so that scarring is produced, which may be harmful. They also produce obliterating endarteritis in the vessels supplying a growth, so that an excessive amount of sloughing may occur, and sloughs in the bladder may prove troublesome and even dangerous. However heavy the screening, a small percentage of beta rays always leaks through the screens. Apart from this, the gamma rays themselves set up secondary beta rays when they strike the tissues. Beta rays destroy and irritate the normal tissues and cause burns, which in the bladder may become septic.

It is difficult to estimate the exact size of a bladder tumour, and so estimate the dose of radon required for its treatment. Cystoscopy gives little help, as the apparent size of a growth, as seen by the cystoscope, varies with the distance at which the lens is held away from the growth. Attempts to estimate the size with a finger in the vagina or the rectum are liable to error. Even with the bladder open, it is often difficult to estimate the extent of the deeper portions of a growth. The nearest approximation that can be made to estimate size is to take *x*-ray pictures with the bladder filled with air or with some opaque medium. These shadows, however, exaggerate to a certain extent the exact size of a growth, and do not give more than an approximate idea of the size of the root of the tumour.

The size of the growth having been roughly estimated, it would appear that it is best to implant the growth with a large number of seeds, each containing a small dose of radon, and to allow them to act for a long time. Small evenly divided doses applied for a long time over a wide area are probably more effective than large doses applied for a short time. The difficulty of estimating and regulating the dose may account for some of the failures.

It is not yet known how large a dose of radium is safe for the body as a whole, or for the bladder in particular. Most observers seem to be agreed that it is not safe to give a dose of more than 2,400 millicurie hours to a tumour of the bladder. After the application of large doses of radon, however heavy the screening, you are bound to get some burning and the production of sloughs. It may take many weeks before the sloughs are thrown off. These sloughs, bathed in urine, are ever liable to invasion by dangerous bacteria, which may cause painful cystitis, and even ascending pyelitis. The cystitis produced by radium may prove most rebellious to treatment, as the normal cells and blood vessels in the bladder have been damaged by the radon, so that the natural process of healing is in abeyance. The bladder may have to be drained for many months, a process that may become most painful and distressing to the patient and his friends. At any time during the process of healing death may occur from pyelitis, septicaemia, or pulmonary complications.

The majority of bladder growths are in the region of one or both ureters. It is a common experience when radon has been applied in the region of one ureter to observe later that it has produced fibrosis around the opening of the ureter, or even to have destroyed a portion of the lower end. How far this action damages the corresponding kidney is a point that will soon be further elucidated by means of uroselectan. It is not surprising, then, if in some cases we appear to destroy the growth and yet also destroy our patient, because the radon has caused fibrosis and contracture of the mouths of both ureters, with consequent uraemia and death. This is a point that has not received sufficient attention.

Finally, if cystitis is already present when the patient is first seen, it is unwise to apply radon unless or until the cystitis has been cured. An inflamed bladder seems to be particularly susceptible to even a small dose of beta rays. The application of radon to patients with cystitis may result in an intractable condition, which may be worse than the growth itself as far as the patient's sufferings are concerned.

What, then, are the hypothetical advantages of employing radon in the bladder?

1. Radon may produce local destruction of neoplastic tissue with less mutilation than is possible by resection.
2. It may produce fibrosis and shrinking round the edge of a growth.
3. It may produce obliterating endarteritis in the vessels supplying a growth, and so may stop bleeding and cause death of the centre of the growth. In this way it often produces a temporary but fallacious idea of cure.
4. It may sometimes render an inoperable growth operable.
5. If the operator is lucky enough just to hit the right dose it may occasionally produce a most striking cure. (Four out of thirty-two in this series.)

What are the disadvantages and dangers of radon?

1. Radon produces only local destruction of growth. It cannot destroy distant extensions or metastases.
2. It is apt to produce painful burns, sepsis, sloughing, septicaemia, and pulmonary complications. If it fails, the last state of the bladder may be worse than if it had not been used.
3. It has a most definite operative mortality, which is quite as high at that attending any other method of dealing with bladder tumours, even that of resection.
4. Instead of destroying, it may stimulate a growth. It appeared to do so in five out of the thirty-two cases analysed.

PROVISIONAL CONCLUSIONS.

As a result of my observations I have been led to the following provisional conclusions to guide me in future practice.

1. Radon should not be employed against simple papillomata, as this type is resistant to its action, whereas it is highly susceptible to the action of diathermy. Diathermy can, in the majority of cases, be employed cystoscopically with complete success, but if the tumours are multiple, or lie in difficult situations, it is sometimes wiser to apply it through an open cystotomy wound. If a good technique is used there is no risk of implantation on the scar. This complication has never occurred in my practice.

2. Radon finds a more favourable field in dealing with pedicled malignant papillomata. Some would argue that the favourable results are really due to the diathermy always employed as a preparation for the radium. This argument holds weight, but I have gained the distinct impression that diathermy alone does not always give permanent results in dealing with this type of growth, and that the addition of a suitable dose of radon may destroy the root of the tumour and may be an added security against recurrence. As large doses are not required in this kind of case, the radon seldom leads to painful and septic burns, or to dangerous scarring of the ureters. On the other hand, one has gained the impression that even in this class of case radon may sometimes act as a stimulant rather than as a destroyer of cancer cells.

3. In cases of early infiltrating carcinoma, whether papilliferous or ulcerating, confined to one side of the bladder, I shall return to my original practice, which I have employed since 1910—namely, wide extraperitoneal resection of the bladder wall with reaction and re-implantation of one or even both ureters. Into the fresh wound so made I shall hesitate to implant radon seeds, as I fear that these will delay or prevent proper healing. Experience has taught me that the mortality from resection is no higher than, if as high as, the mortality that results from attempts to treat such growths by radon, while, when it comes to permanency of cure, radon is simply not in the same street with resection. I have obtained a large number of cures with resection for this type of growth, many of the patients being alive and having no recurrence for fifteen to twenty years after their operations, whereas it is only in the most exceptionable circumstances that one sees advanced cases free from recurrence for more than three to four years after an attempt to treat them by radon (four out of fourteen cases). The explanation seems to be that by resection we do often actually remove all the growth present, while with radon we tend to treat the superficial parts of the growth only, with the result that, though the growth heals over for a time, yet later on it recurs in the depths and gets beyond hope of cure.

4. When it comes to the question of dealing with extensive infiltrating carcinomata I believe that it is dangerous to open the bladder and attempt to implant the growth with a maximum dose of radon. The results in such cases seem to be disappointing. Though the bleeding may be stopped for a time, yet extensive and painful sloughing may occur, and this may lead, after three or four months of permanent suprapubic drainage, to a painful and trying death. Suprapubic drainage in such cases is of doubtful value, and a more comfortable ending is secured if the ureters can be transplanted into the rectum. In suitable cases a total cystectomy can occasionally be performed. If the patient refuses to submit to such procedure, I believe that it may prove a wiser plan to implant these extensive growths with a medium dose of radon cystoscopically, and to repeat the dose in three to four months. Some months later the case might be submitted to deep *x*-ray therapy, which may turn out to be more effective if applied after a tumour has been treated with mild doses of radon than if it is employed alone at the beginning of the treatment.

Many years of patient observation must elapse before we can get a final judgement on the difficult question of radium treatment. So far, radon has not come up to my expectations, and I do not yet feel disposed to recommend it as a first line of defence. I shall continue to put my trust in diathermy and resection as the two most effective weapons against bladder growths.

In regard to the application of radon to the bladder I cannot help asking: Is it as safe as it is said to be? Is it not rather alarming that radon should kill some patients quickly, should accelerate the rate of growth in others, and, even when it causes delay, should not infrequently add to the patient's sufferings? Are we justified in using it despite these results, because it occasionally produces a striking but rather lucky cure? Are we not in danger of forgetting the remarkable results that can be obtained by resection in our enthusiasm for a new method, which is so much easier to apply, but which we may be tempted to employ to save ourselves the earnest endeavour needed to fit ourselves to carry out resection?

REFERENCE.

[1] *Lancet*, December 19th, 1925, p. 1282.

THE RADIUM TREATMENT OF GENITO-URINARY CANCER.*

BY

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AT St. Peter's Hospital, London, during the past five years, 100 cases of carcinoma of the bladder, prostate, and penis have been treated with radium by my colleagues and myself. This research has been carried out with the support of the Medical Research Council and the Empire Cancer Campaign. Of the 100 cases, 58 were bladder growths, 35 were carcinomas of the prostate, and 7 penile cancer.

CARCINOMA OF THE BLADDER.

With regard to bladder growths, various techniques have been tried. They include the introduction through a cystoscope of emanation seeds, the latter being left in position until voided in the urine, or retained permanently in the bladder wall.

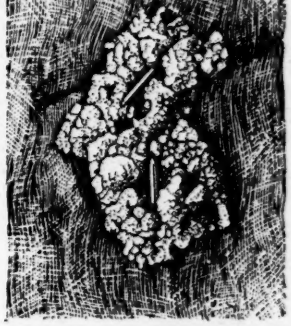
An extended trial was given to the following technique. A suprapubic cystotomy was performed, and needles containing the radium salt were buried in the growth in such a manner as to give homogeneous irradiation of the whole mass. This is possible only if the needles are inserted into the periphery of the tumour outside the bladder, as well as on its mucous surface, and applies to the ulcerative variety only.

In the cauliflower type the tubes were buried in the base only. The spacing of the tubes was about 2 cm., and the quantity of radium element in each either 1 mg. or 5 mg., the time of exposure varying from one to six days. Screenage used was platinum 0.5 mm. thick.

Modifications of this technique consisted in removing the cauliflower mass down to its base with the diathermy knife before inserting the radium, and also injecting the tumour with 2 per cent. fluorescein.

The only advantage gained by the cystoscopic method is that the bladder is not opened. Apart from the obvious danger of leaving foreign bodies in the bladder wall, which collect phosphatic deposits around them (see drawing), it is absolutely impossible to determine the extent of the growth with the aid of the cystoscope alone. Excluding the use of the microscope and the *x*-ray tube, the limits of any cancer can be defined only by digital exploration. Experience alone develops this cancer touch in the fingers. On these grounds, therefore, the technique may be dismissed as inefficient.

Of the fifty-eight bladder growths, thirty were treated by myself, by open operation over a period of five years. Not one of these cases can be said to have been cured, though it must be made quite clear that the cancer was in an advanced stage. A portion of growth was removed at the time of operation to prove the presence of an infiltrating tumour, and to exclude the diagnosis of papilloma.



A drawing of a phosphatic calculus which contained two radon needles and was adherent to the bladder wall.

On the credit side two facts stand out. First, with few exceptions, for a space of six to eighteen months, the distressing symptoms of urgency and pain on micturition were in abeyance, but they then reasserted themselves, with the result that there was a steady decline in the general state of health. Cystoscopy during this period showed a bullous oedema of the area of mucous membrane irradiated, and when the tumour was of large size a mass of dead growth, surrounded by a raised edge and covered by what looked like normal mucous membrane. As time goes on, the patient dreads distension of his bladder, and cystoscopy, even under an anaesthetic, affords little assistance for the study of pathological changes.

The second fact—and it is a remarkable one—is that, however severe a haemorrhage may be, it can be controlled by irradiation of the whole malignant mass, but the dosage must be comparatively large—that is, tubes containing not

* A communication to the Section of Surgery at the Annual Meeting of the British Medical Association, Winnipeg, 1930.

less than 5 mg. of the element should be left in position for twenty-four hours. A small quantity with a long exposure is useless in these cases. I know of no agent—chemical, thermal, or electrical—which is so reliable a haemostatic as radium. I recall two cases where it was feared that the patients might die of exhaustion before the growth could be irradiated. Blood transfusion appeared to give each patient the necessary strength to withstand the operation of suprapubic cystotomy. The control of haemorrhage by irradiation was complete within twenty-four hours.

One had hoped that better clinical results would have been obtained by the use of needles containing 1 mg. each of element, with an exposure of about six days, but it has been found very difficult to keep the tubes buried in the growth for longer than two or three days. They then fall out into the cavity of the bladder. The displacement appears to be due to two causes—namely, the necrosis of cells immediately in contact with the needle, and the muscular act of defaecation.

It is a striking fact, confirmed by numerous observers, that bad results are to be expected from radium irradiation where severe sepsis has intervened upon a malignant tumour. I know of no exception to this rule. In vesical carcinoma, complicated by infection, after irradiation, the disease makes rapid progress, and a temporary control of haemorrhage is the only advantage gained by the use of this method.

It was hoped at one time that the painting or injection of fluorescein into the tumour, when the cells are exposed to irradiation, would improve our results, but there is no proof that the patient benefited in any way from this technique. On the other hand, the combination of diathermy with radium, in removing a large mass of growth within the cavity of the bladder at the time of operation has given immediate relief.

Carcinoma of the Prostate.

An account of the results of the radium treatment of carcinoma of the prostate does not encourage the hope that patients suffering from this type of the disease can be cured by this method. In the majority of cases, when the disease is detected by the doctor the growth is no longer hemmed in by the capsule of the prostate, and no local-acting agent like radium will destroy it.

If radium has no curative effect upon this type of glandular carcinoma, can symptoms be relieved and life prolonged by its use?

Seventeen years ago I commenced a study of the radium treatment of prostatic cancer, and between 1913 and 1923 inserted radium tubes by the perineal route into fifteen patients. The immediate results were satisfactory; the tumour shrank in size, and in some cases seemed to have disappeared. There was a reduction in the frequency of micturition, and in two cases of retention normal micturition recommenced. As the months passed, however, these patients returned, complaining of increasing difficulty in passing water, and later some of them developed retention, requiring suprapubic cystotomy. Very few of these patients survived two years, and all except one were dead within four years. Post-mortem examinations carried out on two patients on whom suprapubic cystotomy had become necessary, following irradiation, revealed contraction of the ureteric orifices and atrophic kidneys.

That radium often destroys the malignant mass I have not the slightest doubt, but the anatomical position of the prostate is a stumbling-block. Whether a small dose of radium is employed over a long period, or a large quantity for only a few hours, there is a stimulation of the connective tissue cells by the rays. The resulting formation of fibrous tissue leads to serious complications in tiny ducts like the ureters.

A study of the pathology of prostatic cancer has revealed to me that the lower ends of the ureters are commonly encased in malignant tissue. The danger, therefore, of replacing the carcinoma cells by even a minimum of fibrous tissue is obvious. I have performed a post-mortem examination in a case of carcinoma of the cervix, treated by the most fashionable technique in England to-day, where the radium had completely destroyed the malignant growth but left the ureters contracted by fibrous tissue. The clinical manifestations of this fatal complication had occurred two years after the patient had been discharged from the gynaecological clinic as an apparent cure. I have now entirely abandoned the perineal route, as by it homogeneous irradiation of the cancer, which has extended far beyond the boundaries of the prostate, is impossible. I am carrying out the technique advocated by Herbst of Chicago, who performs suprapubic cystotomy and irradiates the bladder base and prostate from within the bladder. An additional advantage of this method is that the surgeon is able to determine whether the disease has extended beyond the interureteric bar. If it has, radium treatment is out of the question. As yet I do not feel justified in expressing an opinion on the results of radium treatment by the suprapubic route, but I must frankly admit that at the best it is unlikely to be as satisfactory as the radical operation of excision of the gland and bladder base.

Carcinoma of the Penis.

A study of the effect of irradiation upon carcinoma of the penis brings us much nearer the possibility of cure than that of cancer of any other genito-urinary organ. The reasons for this optimism are as follows.

1. Cancer of the penis is a local disease, and never gives rise to general dissemination, as is observed in a glandular carcinoma. I wish to stress the point that lymphatic involvement is confined to the inguinal glands. This observation has met with criticism from some distinguished urologists, but I am unshaken in my belief that I have given a correct picture of the clinical course of this disease in my paper read before the Section of Urology of the Royal Society of Medicine in January of this year. It has a most important bearing on prognosis.

2. The most sensitive of the carcinomata to irradiation is the squamous-celled variety, which is the type met with on the penis.

3. In cancer of the penis, being a surface growth, more than one application of radium can be given without any disturbance to the patient, such as occurs in the deep-seated tumours of the urinary tract.

4. This disease of the penis can be cured by amputation. Therefore if radium causes disappearance of the primary lesion it is strong presumptive evidence that the final results will be as satisfactory as that produced by surgery.

It is unfortunate from the research worker's standpoint that in England carcinoma of the penis is a rare disease. During the past five years seven cases have been treated at St. Peter's Hospital with radium. In one of these, which was very septic and had a most offensive odour, irradiation failed to produce any result, and eventually the organ had to be amputated. All the other patients benefited enormously by radium treatment. The tumours disappeared, and thus permitted both the genital and urinary functions to act normally.

The technique to date has been to use platinum needles, 0.5 mm. thick, with over-all length of 22.5 mm., each containing 5 mg. of the element, and to bury them in the growth about 2 cm. apart, so as to produce homogeneous irradiation of the whole tumour. For the initial exposure each needle has been left in position for twenty-four hours; for every subsequent one, thirty-six hours. In order to protect the skin of the scrotum and testicles from the rays a lead plate must be placed between these structures and the penis. The plate should be sufficiently long to allow each end to rest on the thigh. For the introduction of the needles local anaesthesia suffices. The changes in the tumour, which can be observed with the naked eye, commence about the third day after irradiation. In the papillary variety the projecting parts of the growth become smoothed out, and a thin whitish film, due to keratinization, appears over the whole surface. If a lethal dose has been given the tumour will have disappeared in a fortnight. When a malignant ulcer is treated the base is replaced by healthy granulation tissue in the course of from ten to twenty-one days, and normal squamous epithelium commences to grow in from the edges. The complications of treatment by irradiation are difficulty in micturition, caused by oedema of the urethral mucous

membrane, sloughing—the result of overdosage—and stricture of the external meatus.

It is a striking fact that in all except the advanced cases of penile cancer the removal of the primary lesion results in a decrease of the size of the inguinal glands, and in some cases complete disappearance. This, of course, means that the enlargement is due principally to sepsis, and not to malignant disease. The treatment of these enlarged glands depends upon the clinician's interpretation of the pathological processes at work. My view is that to dissect out the lymphatic tissue at the same time as the primary growth is eradicated is a most dangerous practice. First, lymphatic oedema may result, comparable to the condition known as "brawny arm," following the radical operation for carcinoma of the breast; secondly, there may be an extensive cellulitis, due to operative intervention in tissues heavily charged with infection.

As the malignant cells do not penetrate beyond the inguinal regions it is perfectly safe to allow three months to elapse after the removal of the growth of the penis, in order to observe any changes in the lymphatic tissues. As I have already stated, sepsis is the chief factor in causing the glands to enlarge, and the elimination of the primary focus will cause the disappearance of the adenitis within a few weeks. If at the end of three months the glands are still larger than normal, and the skin over them is thickened, we can be quite certain that these changes are due to malignant disease. It is my practice, then, to excise the diseased tissues, rather than to speculate with radium.

Surgical Removal of Primary Growth.

Finally, we have to answer the all-important question: When is the primary growth to be irradiated, and when is it to be removed by operation?

Surgeons are unanimous in their opinion of the value of the Gould operation in eradicating the disease. The functional result, so far as micturition is concerned, is also satisfactory. There is complete control. Narrowing of the external meatus frequently occurs, and requires intermittent dilatation with bougies. This defect, and the loss of the whole organ, are the two great disadvantages of this method of treatment.

On the other hand, by irradiation the penis is preserved, and though stricture of the external meatus may sometimes result, its frequency is not comparable to that observed after amputation. If irradiation fails, we can still fall back upon amputation, with the knowledge that delay in surgical removal has not eliminated the hope of cure.

OPTIC ATROPHY, WITH RETINAL CHANGES, CAUSED BY HIGH-TENSION CURRENT.

BY

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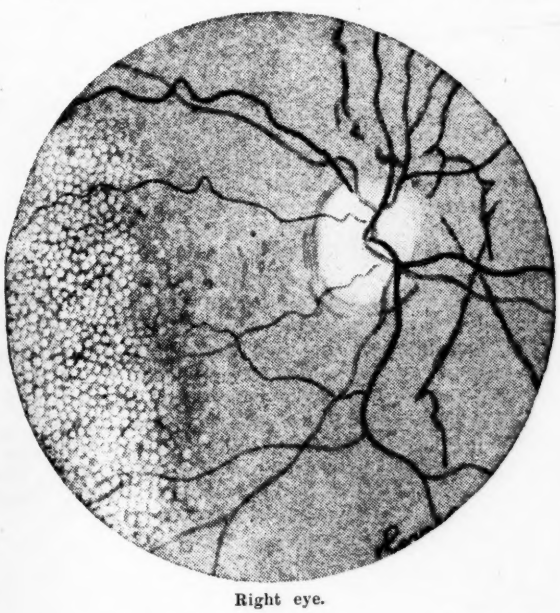
I PUBLISH the following case because similar cases must be rare, and it deserves to be recorded. The history was given to me as follows.

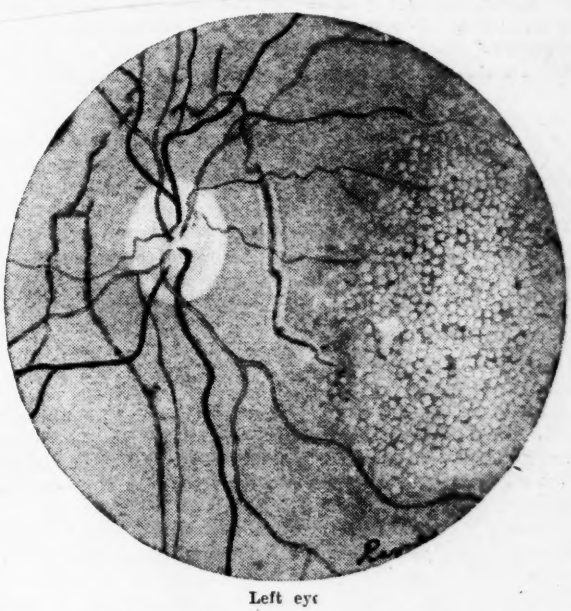
In June, 1927, the patient, aged 31, an acetylene burner by trade, was going into an electric crane to do some repairs when he happened to take the wrong lead to the crane and got a shock with a current of 460 volts A.C. He was taken to the local hospital. His left wrist was burned, and also his toes. His eyes were bloodshot for four months. He received no treatment for them in the hospital because he did not complain about them; they did not hurt him, and his sight was not affected. He was in the hospital for a month or five weeks. Six or seven months afterwards his eyes became misty and used to hurt him. He went to his doctor about them, who advised him to see the nearest eye specialist, who tested his eyes and prescribed glasses. As his eyes still troubled him he again visited his doctor, who sent him to the Hull Royal Infirmary, where I first saw him on October 8th, 1929. Regarding the family history, he has three sisters and five brothers, all with good sight; his father and mother have also good sight.

The condition of his eyes, when first seen, was as follows: Pupils active to light and accommodation. Conjunctivae and corneae normal. Right eye, vision 6/36. The fundus examination showed the disc to be pale and atrophic, and the arteries slightly smaller than normal. There were a large number of rounded white areas in the macular region surrounded by pigment. To the nasal side of the disc there was an angioid streak. The retina appeared healthy in the periphery. Left eye, vision 6/24; upper part of the disc pale. There were similar rounded areas to those seen in the right eye, and angioid streaks on either side of the disc. The periphery showed retinal degeneration. A small degree of myopic astigmatism was present in the right eye, and a small degree of myopia in the left. Both fields of vision contracted all round.

Wassermann reaction negative; urine normal. He was examined by Dr. Muir, honorary physician to the Hull Royal Infirmary, who reported that he could find no disease of the central nervous system. I saw him again on October 15th, 1929, January 10th, 1930, and May 13th, but the condition of his eyes has remained the same.



Right eye.



Left eye

As the case was one of peculiar interest, I sent him up to London to see Mr. A. H. Levy, surgeon to the Central London Ophthalmic Hospital, who reported as follows:

"The fundi show most peculiar changes. Besides the optic atrophy, which is well marked in the right, there are macular changes, and also vascular changes. The brown lines look somewhat like angeoid streaks, except for their colour, and the whole gives me the impression of a very slow non-infective inflammatory process."

Mr. Levy considered that the condition had definitely been caused by the accident.

Ocular injuries through electricity are not common, as shock of sufficient severity to produce fundus changes is generally fatal. The modes of injury are as follows: lightning, exposure of the eyes to electric flash, and electric shock.

The following fundus changes have been reported:

(*a*) Hyperaemia, oedema, changes in calibre of arteries and veins.

(*b*) Localized lesions, including scar formation observed round disc (Terrieu), near macula (Haab). Hole at macula with pigmentation at periphery (Kramer).

(*c*) Fully established choroido-retinal changes, with and without gross interference in visual acuity (Lundsgaard, Junius, Schirmer, Robinson, and Terrieu).

(*d*) Choroido-retinitis leading to detachment (Lundsgaard).

(*e*) Detachment in one eye and optic neuritis in the other (Pfahl).

(*f*) Optic atrophy (Ulbrich, Haas, Junius, Dor).

I am greatly indebted to Mr. Levy for his assistance in looking up the references to reported cases; also to Messrs. Rayner (Hull) for making drawings of the fundi reproduced.

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MAJOR DERMATOSES OF CHILDREN.

BY

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A "dermatological bad bargain" must be our first consideration. Chronic seborrhoea capitis is not dramatic, it is unpleasant to look at, inveterate in its resistance to ordinary treatment; it is a bar to the education of its owner, a hindrance to its possessor's marriage or employment, and, throughout its course, a means of reproach to the profession. I shall first describe the clinical picture as we see it in young children, outline its clinical variations and complications, and suggest a line of treatment that I have most frequently found to be efficacious.

CHRONIC SEBORRHOEA CAPITIS.

The disease appears, when developed in a child of 5 or more years of age, as a scalp condition whose history is seldom definitely obtainable. The scalp is red or pink, scaling all over, and generally dry. Moist patches from exudation of clear serum are covered with heaped-up minor aggregations of damp, yellowish scales. Over the greater part of the head the pink surface is dry, and covered with copious, easily detached white scales. The hair has no lustre; its surface, if dark, is greyed. Generally the hair is plentiful, but at times in an exacerbation of the disease there may be a general loss of hair producing notable alopecia; regrowth is the rule. Were the condition confined to the scalp it would be bad enough, but extensions on to the body are frequent, particularly to the flexures. The folds of the groins, the umbilicus and the armpits, although hairless, are red, and covered with copious, easily detached white small scales. At times all these sites may be moist, exude freely, and show scabs and macerated epidermis, heaped over the reddened surface as a pale yellow malodorous and pultaceous accretion. During acute phases it is common for a moderate adenopathy to develop in the neck and groins. These children otherwise are well, but particular attention should be called to a hall-mark of skin chronicity which they invariably show. The eyelids are reddened at their margins, while yellowish crusts are formed at the roots of the eyelashes. The lids are pink and roughened from frequent rubbing, matted bunches of eyelashes are often seen, and a considerable disfiguring loss of eyelashes takes place also. In about one-third of the cases two further extensions can be seen. First, the eyebrows may be involved; their site is reddened and scaling, or moist and scabbed. Secondly, behind the ears red fissures may develop; the surface of the ears is pink, the whole ear is thickened, while stiff and macerated scales and caked exudate often cover a retained yellow, sticky, purulent discharge, that has been formed at the crescent of attachment of the auricle to the scalp. Both sexes are afflicted with an equal incidence. The disease is far more common in hospital and institutional work than in private practice. For this, the factors of heredity, uncleanliness, a disinclination on the part of the parents to perform unpleasant dressings, and improper feeding, must be taken into account. Although superficial pustular dermatitis speedily clears up when removed into the best hospital surroundings, nevertheless the scaling erythema of scalp and flexures remains, apparently responding to the varied treatment of the house-physician, but, quite unaccountably, exacerbations occur that bear no relation to changes in diet, climatic changes, or to variations in the general health. It is soon borne upon the observer that these patients have a fragile skin; they are photosensitive, and exposure to the sun on a bright day makes pink skin red, and red areas moist. These patients respond by aggravation if they are washed with any household soaps, or if mercurial ointments are applied in an attempt at antibacterial treatment. Such children are not of the nervous type so brilliantly described by Cameron. They do not suffer from dental sepsis, there are no signs of intestinal toxaemia, and their differential blood count is normal. They are not anaemic, or wasted, or mentally dull, although they have a strange tolerance of their persistent malady.

In treatment, personal cleanliness is of the first importance; underclothing and bed linen should be changed and boiled daily. We can assume that by the time these cases have reached the specialist's hands, bland treatments, such as bran baths, calamine liniment, various zinc ointments, soft paraffin dressings, a period of salt-free and also of low sugar dietaries, have already been tried without success. Thyroid extract and ergosterol may have been exhibited, and yet the disease remains. My practice is to order an *x*-ray epilation to the whole scalp at once. If the child is an inmate of an institution, or under the care of an authority through which such a treatment is not easily obtainable, I prescribe thallium acetate, 8.5 milligrams per kilo of body weight, dissolved in a draught of sweetened water. Whilst awaiting the epilation that should occur after a latent period of three weeks, I swab the scalp and any other lesions with a 2½ volume peroxide lotion. This is speedily mopped away with boiled water, and the scalp and lesions are then sprayed with Sir Lenthal Cheatle's malachite green, which is a solution composed of equal parts of 2 per cent. malachite green in 80 per cent. alcohol, and 2 per cent. mercuric chloride in 80 per cent. alcohol. This application is, to some patients, painful for a short time at first, but it is an invaluable aid for infected dermatoses. The scalp should be cropped closely before the application of *x* rays or giving of thallium, so that local medication may be facilitated. The backs of the ears, the axillae, and the groins should also be sprayed. Frequent application of white lint fomentations for twenty-four hours, or a starch poultice, is occasionally needed before a direct attack can be instituted in this manner. Application of unguentum hydrargyri oxidi flavi to the eyelids twice a day is also advisable. A watch must be made for bed-wetting, and naturally constipation will receive proper treatment. It is a common tradition that soap and water is bad for these patients. Hard water and common soaps undoubtedly are, but I have never regretted bathing these patients daily, using Midgley's or Allen and Hanburys' basic over-fatted soaps; a second water is always used, however, to remove any curds from the skin, and hot, soft towels are advisable to lessen the need of skin friction and to shorten the washing process, since, in winter, these children frequently develop attacks of bronchitis.

During treatment, patients are kept in bed, and at the last stage in the latent period after *x*-ray treatment, it is highly advisable to use the weapon of protein shock therapy. This is best given on the nineteenth evening after the *x*-ray treatment, so that the period of fever corresponds to the time of epilation. The customary dose

I employ is 0.1 c.cm. of T.A.B. injected intravenously. The febrile reaction is treated with general heat, hot drinks, sal volatile, and aspirin. When the hair falls, I change over to lotio glycerini plumbi subacetatis applied to the head and to the other lesions thrice daily until the pink flush has gone and the skin texture is natural. This treatment is truly severe, but the dreadful outlook of these patients—if not cured—demands courage and resource on the part of the physician in no way different to that needed by a surgeon dealing with a grave malady.

Flexural Prurigo.

The second major affection of children is flexural prurigo. Essentially this condition starts at the teething age with a few, or many, papules of strophulus that are often termed "lichen urticatus" or papular urticaria of infants. From the onset of this usually minor malady the child is seldom completely free from skin trouble. Sometimes the mother says the child's skin is affected when exposed to the sun and to the east wind; others say the child is only free when at the seaside, in the salt water. But, as the years go on, the malady changes, and presents an eruption of a constant type: it is found commonly at the bends of the elbows, knees, and wrists, less so in the groins, rarely on the scrotum and penis; sometimes the skin is harsh, purplish, and thick, while small boils and excoriation may be present or absent. The parents or nurse will always volunteer the statement that the child scratches whenever it is not busily occupied. The patient is always of a nervous, sensitive, irritable, emotional make-up; teeth-grinding is common, nail-biting and bed-wetting are also frequently present. In some cases the parents will give a history of epilepsy, of asthma, or of migraine in the family. Pallor of the skin is often a common concomitant; ichthyosis may be present. In this connexion we must remember, however, how Dr. H. Barber of Guy's has stressed the unity and importance of the eczema-asthma-ichthyosis-prurigo complex. The patches of thickened skin or lichenification that we are considering may be small, defined, round areas 3 to 4 cm. in diameter; they may be bands along the course of the borders of the popliteal space; they may be large quadrilaterals filling the skin area of the bends. If, as seems to be the case, prurigo is now accepted to be not a disease of the skin but essentially a subjective irritation in which the skin appearances are secondary to rubbing, scratching, and medication, then these cases are truly prurigo. The differentiation between pruritus as a symptom and prurigo as an eruption accompanied by itching is artificial. The existence of a primary papular localized pathological skin change that causes intolerable itching is a disease conception which many dermatologists will not concede. If the importance of the itching and the unimportance of the physical signs be realized, the term "eczema" will not be applied to these cases, for we are dealing essentially with a nervous malady, a disorder of sensation in which a highly suggestible child has developed a "tic" of scratching; the scratching causes itching, and a vicious circle is perpetuated.

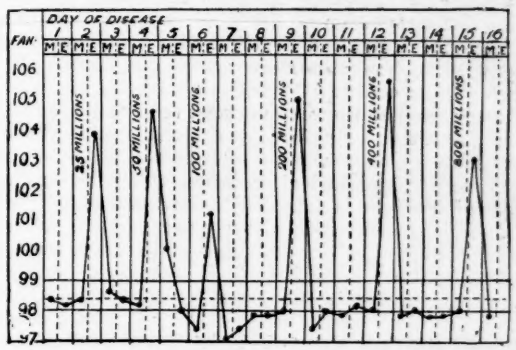
In treating these patients it is well to separate them from a highly nervous, watchful, over-sensitive mother. The affected lesions should be enclosed in pasta zinci or in Unna's paste. The arms should be splinted with tubes of corrugated cardboard, extending from the axillae to below the fingers. Sedative drugs are certainly helpful. A child of 5 will derive benefit from the administration of 10 grains of potassium bromide night and morning. There is no objection to bathing these children with a bland superfatted soap, provided that the dressings are laid out so that immediately after the bath the skin is protected from variations of temperature and is made inaccessible to the child's eyes and fingers; movements of air or the touch of clothing will easily bring on spasms of uncontrollable irritation, and blood can be drawn in two seconds by an active child. Pix liquida is often a most helpful local application, itching ceasing after the first twenty-four hours' treatment; whilst the mother may be entrusted, in a minor case, with a small bottle of pigmentum chloral co., which consists of equal parts of chloral hydrate, menthol, and camphor, and she can rub a drop or two of this into irritable spots at bedtime to ensure a quiet night. Autohaemotherapy is of service; 20 c.cm. of blood is withdrawn from a vein at the bend of the elbow and injected immediately into the buttock muscle. This should be done twice a week for three weeks, care being taken to grease the plunger to prevent clotting. Two spaced exposures, each of one-third of an erythema dose, of x rays to all the affected areas of skin at an interval of a fortnight will be most helpful in refractory cases.

Memoranda:
MEDICAL, SURGICAL, OBSTETRICAL.

NON-SPECIFIC PROTEIN THERAPY IN ELEPHANTIASIS.

I am prompted by the interest taken during the last few years in this form of therapy to record the following case of elephantiasis, in which great improvement followed the administration of protein shock injections.

A male Chinese beggar was admitted to the Civil Hospital on November 22nd, 1929, suffering from a solid oedema of the left leg, confined to below the knee. Unlike most of his brethren, he regarded his deformity as an encumbrance rather than an



acquisition, and asked if anything could be done for him. The affected limb was fully twice the size of the other, and the skin was coarse and thickened; digital pressure made not the slightest impression upon it.

The patient, a native of Tsi-nan-fu in the west of Shantung, where, according to Maxwell, elephantiasis is rare, gave a history of two years' duration. He was put to bed and the limb was firmly compressed by a crêpe cotton bandage; next day he was given an intravenous injection of T.A.B. vaccine containing 25 million organisms and suitably diluted with normal saline solution. On the fourth, sixth, ninth, twelfth, and fifteenth days increasing doses were given—namely, 50, 100, 200, 400, and 800 millions. The reactions, though severe, were never alarming, and in each case subsided within twenty-four hours. From the first a steady diminution in the size and a marked change in the consistency of the leg were apparent; the bandage had to be readjusted daily as it became loose.

The photograph reproduced here was taken on the sixteenth day, when he decided to leave hospital and resume his wanderings. As can be seen, the limbs are practically identical in size. That elastic pressure played a large part in the result is evident from the marks of the bandage, which show up clearly in the picture, but I am convinced that elastic pressure alone could not have induced such a favourable effect in so short a time, even in a case admittedly mild as these cases go.

I think that two departures from the usual technique may have been factors in the success which was achieved: (1) the shorter interval between the injections; and (2) the larger doses of the vaccine. I regret I did not take a photograph before commencing treatment, but the latter was purely empirical, and I did not anticipate such a happy result.

Weihaiwei. LEO MCGOLRICK, M.B.,
Senior Medical Officer.

Reports of Societies.

THE PREVENTIVE VALUE OF HYDROLOGY.

AT the meeting of the Section of Balneology and Climatology of the Royal Society of Medicine on November 21st, Dr. F. G. THOMSON of Bath, the new president, delivered the annual address from the chair.

Dr. Thomson said that the treatment of certain definite diseases by what was now called medical hydrology appeared to be one of the oldest forms of practical therapeutics, and the fact that certain previously sick people derived benefit from a course of baths and waters had been observed from early times. Certain disorders had come to be regarded as specially suitable for this form of treatment. Most of the chronic diseases were preceded by a more or less prolonged stage, in which errors of function were the main, and in many cases the only, feature, and when the truism was repeated, that the earlier the stage of the disorder at which the patient sought advice the more chance was there of cure, it was meant that the benefits from any form of treatment were mainly confined to the correction of functional disorder. The aims and objects of hydrology were to increase elimination, to train the cutaneous responses to heat and cold, thereby improving the circulation of the blood in the cutaneous areas, to secure the irrigation of the muscles and subcutaneous tissue with a free and more active circulation of blood, to improve the adaptability and elasticity of the peripheral circulation, and to improve nervous tone and general metabolism. A course of hydrological treatment might be said to constitute a comprehensive and, on the whole, a very efficient form of physiological training, and it was a question of how far it might be adapted to serve the ends of preventive medicine. Discussing the pre-rheumatic child, Dr. Thomson said that, so far as his own experience went, it was almost unknown for children to be sent to a health resort for a course of treatment; such luxuries were almost invariably for their elders and betters, yet he ventured to think that much more good might often be done to these rheumatic children than to many of their old crippled relatives who so often required treatment. A great deal could be done to train his cutaneous reactions by simple measures carried out in the child's own home. Clinical evidence went to prove that a large proportion of the less severe cases of muscular rheumatism were due either to an accumulation of fatigue products or to autogenous vaccines of gastro-intestinal origin. It had been proved that if baths were instituted early enough this treatment might be said truly to be preventive of many of the most painful and crippling effects of fibrositis.

It was such conditions as obesity, gout, glycosuria, and metabolic diseases of the menopause which offered the widest field to hydrology as a preventive measure. The onset of obesity was not always to be explained by food and lack of exercise. Many men and women began to put on weight at middle age simply because, for some reason or other, their sympathetic endocrines became relatively inefficient. Among the causes, chronic infection, intestinal or otherwise, must be seriously considered. The main indications, in addition to regulation of diet and removal of any cause of chronic infection, were to promote the metabolism of fat by hot immersion or radiant heat baths, and to promote endocrine activity by the stimulating action of massage, douches, needle baths, and so forth. The treatment of gout by hydrology had always been regarded as one of the most successful applications. The essential treatment of gout must always be the removal of gastro-intestinal putrefaction. The preventive treatment of gout offered a wide field for useful activity at many health resorts. Although in theory the climacteric must be regarded as a normal phase in the life of a woman, and should entail only trifling and temporary inconvenience, a large proportion of women at the "change of life" suffered from definite metabolic disorders. The middle-aged woman of increasing weight, with a general thickening and loss of elasticity in the subcutaneous tissue, was sufficiently familiar to everybody, and presented disabilities which, if allowed to go on, were going to impose a serious handicap upon her for the rest of her life. There was no class of patient for whom treatment by balneological and allied methods was likely to prove more beneficial. Relatively hot immersion baths formed a very valuable factor in treatment, especially when combined with massage douches. Finally, Dr. Thomson mentioned hyperpiesis or idiopathic high blood pressure. All recent work on the capillaries went to show that the capillaries were themselves capable of wide and active variations of calibre. He thought it not unreasonable to assume that the capillaries played a much more important part in determining the blood pressure than was usually recognized, and their functional disuse and ultimate wasting might be a primary etiological factor. The good results of hydrological treatment in the early stages were due to the restoration of the patency of the capillaries.

Dr. LEONARD WILLIAMS, in proposing a vote of thanks, said that he had little doubt that the human race in the future would find the adequate and scientific application of hydrology one of the best methods of preserving health and strengthening resisting powers; and Dr. J. F. HALLS-DALLY, in seconding, agreed with Dr. Thomson that the increasing knowledge of the capillary system in dealing with arterial pressure cases was likely to be productive of something very useful from the point of view of treatment.

THE TEETH AND THE STOMACH.

AT the meeting of the Section of Odontology of the Royal Society of Medicine on November 24th, with Mr. CARL SCHELLING in the chair, a paper by Dr. A. F. HURST was read, in the absence of the author through indisposition, by Dr. J. F. VENABLES.

Dr. Hurst said that the normal activity of the small intestine played a part of such fundamental importance to the body as a whole that it was fortunate that the body had a double line of defence to protect it—namely, the mouth and the stomach. The majority of people were provided with a first line of defence—the mouth—which was potentially good, but they did not make sufficient use of it; food was bolted without being chewed, with the result that the membrane was subjected to mechanical, chemical, and thermal irritation. The gastric juice dissolved connective tissue and it softened, though it did not break up, lumps of unchewed carbohydrate. The stomach did its inadequate best to perform the functions which the teeth should have carried out. In most individuals the second line of defence proved adequate, even when the individual did not trouble to use his first line of defence, or when the latter was impaired. When the stomach was ill used as a result of insufficient activity of the first line of defence it was unlikely to suffer greatly unless its owner was one of the 10 per cent. of people in whom less than the average amount of gastric juice was secreted. Achlorhydria was present in a large proportion of cases of chronic appendicitis and infection of the gall-bladder; it was a very important predisposing cause of intestinal infection, such as typhoid and paratyphoid, and was a constant source of danger to residents in tropical countries. Pyorrhoea alveolaris, and to a less extent an inadequate chewing surface, thus played an important part directly in the pathogenesis of chronic gastritis and indirectly in that of a large number of other diseases. Turning to hyperchlorhydria, Dr. Hurst said that dental infection of all kinds had an important influence on the pathogenesis of gastric and duodenal ulcer in individuals who were predisposed by having a constitutional tendency to hyperchlorhydria. The treatment of pyorrhoea alveolaris and the extraction of teeth with infected roots were not only important to the successful treatment of ulcer, but played a still more important part in preventing recurrences. Much could be done by effective dental hygiene to prevent the swallowing of infective material. If this could not be prevented, the stomach should be washed out periodically, otherwise an acute exacerbation of the ulcer might occur.

There was a great deal of evidence to indicate that cancer of the stomach was never a primary disease; it was secondary to chronic gastritis or, less frequently, to chronic gastric ulcer, so that the prevention and treatment of these conditions might be regarded as an indirect

method of preventing cancer. Dr. Hurst added a few words about dental sepsis and abdominal operations. Whenever possible, operation on the alimentary tract should be postponed until any pyorrhoea which might be present had been, at any rate temporarily, overcome. Exposure of the peritoneum from an abdominal operation resulted in reflex inhibition of the motor secretory function of the alimentary tract, and the result was that a temporary achlorhydria was produced, so that the oral streptococci were not destroyed when swallowed. Probably this was the cause of those gastro-jejunal ulcers which sometimes formed immediately after the gastro-jejunostomy.

At the close of the paper a clinical demonstration was given.

FOOD AS A PREVENTIVE OF DISEASE.

AT the Section of Epidemiology and State Medicine of the Royal Society of Medicine on November 28th, with Professor MAJOR GREENWOOD in the chair, a paper on food as a preventive of disease was read by Dr. J. M. HAMILL.

Dr. Hamill said that well-being was dependent on two factors—heredity and environment—and of these heredity played a part which was often underestimated. The most intimate and powerful of all environmental influences was food; by means of proper food an individual's hereditary equipment could be developed to greater advantage than by any other environmental means. The body, when properly fed and well nourished, had extraordinary powers of resistance to disease. The incidence of tuberculosis in a community appeared to be closely related to the food supply. It diminished when the food supply was ample, and increased when the quantity and quality of the diet became inadequate. Troops could withstand great hardship when the rations were sufficient and suited to their needs. During the Middle Ages the relationship between famine and pestilence was well understood. It was not a simple matter to say with certainty what was sufficient and suitable food or when a diet might be regarded as completely satisfactory. Man would seem always to have eaten everything of an edible nature available, and recent researches had shown that the keynote of successful diet was variety. It was only by variety that the body could obtain all the various constituents essential to nutrition. Milk, one of the few foods expressly manufactured by an animal for an animal, was a perfect food for the young, and even for the adult milk and milk products formed some of the most valuable foods obtainable. A current view supposed that primitive man was in some ways more favourably situated with regard to food than the man of to-day, but Dr. Hamill did not think this could be substantiated. Primitive man had to be content with whatever food was available, and this must often have been scanty, difficult to obtain, and not always suitable dietetically. In this country, in former times, food resources were very limited, but to-day the world was Britain's larder. Nevertheless, a considerable proportion of the population was living on diets not to be regarded as ideal. Among large sections of the community price was an important factor in determining the composition of diet, and ill-balanced diets were not uncommon. Inadequate diet conduced towards maldevelopment and lack of resistance to disease. Specific instances were rickets, defective teeth, scurvy, beri-beri, pellagra, goitre, and a peculiar form of ophthalmia. These diseases were only the advanced stages in a long train of disordered metabolic activity, which in its earlier stages produced effects so slight as to elude all means of detection at present available. Most of these disorders resulted from deficiencies in diet, but in the production of rickets a positive factor contained in cereals might also play a part. The chief factor in the causation of rickets was deficiency of vitamin D, but it was impossible to say what degree of deficiency was necessary to produce rickets without taking into account other factors, such as the supply of calcium in the diet. Vitamin D occurred most richly in the liver of fishes, and in fat fish, such as the herring, also to a less extent in egg yolk and milk products. Milk contained a large amount of calcium, and consequently there was an interplay of the conditions for calcium and vitamin D. If a diet contained a generous amount of milk, it was probable that the supply of vitamin D would be adequate in most cases for the needs of the body. Cereals must constitute a large part of the diet of man, and instead of condemning them because they might be unsatisfactory in certain respects, cereals should be used with other foods, such as milk and fat fish, capable of compensating for their deficiencies. It was now possible to reinforce the vitamin D content of food by adding to it ergosterol, or simply by irradiating the food itself with ultra-violet rays. There was on the market a margarine to which vitamins A and D had been added with the object of making the product approximate more closely to butter in nutritive value.

Another aspect of nutrition was the damage which might be done to important constituents of food as a result of processes which food might undergo in its preparation. Until recently it was thought that the canning of fruit and vegetables necessarily destroyed vitamin C. By modern improved methods of canning, whereby air was excluded, less destruction of vitamin C occurred, and tomatoes and fruits were very little affected in this respect by canning. The pasteurization of milk was now widely practised, and the chemical and physical properties of milk were not perceptibly affected by a temperature of 145° F., with the exception that about 2 per cent. of the calcium might become indiffusible, and some of the small amount of vitamin C which milk contained might be destroyed. The degree of destruction of vitamin C during pasteurization appeared to depend in part on the metal in which the milk was heated; aluminium was said to have much less destructive action than copper. It was less easy to justify the destruction of the colouring matter of flour by bleaching. This colouring matter was carotene, which would seem to be a precursor of vitamin A, and it might be that in certain circumstances the body relied upon this carotene for an important proportion of its vitamin A supply. The treatment of fruit by means of hydrogen cyanide for the destruction of insect life exerted an inimical effect upon the living cells of the fruit, and possibly impaired the nutritive value. During the long ages of evolution a variety of materials had been pressed into the service of nutrition, and the body metabolism had moved along such lines as made it now absolutely dependent on a supply of these materials. When a metabolic process had once been established it was not readily to be put aside or modified. Biological research tended more and more to emphasize the importance of the infinitely little in the processes of metabolism. Slight changes in the composition resulting from manipulation might produce changes out of all proportion in the nutritive value of a food.

Sir GEORGE BUCHANAN said that while the vitamin supply in the case of growing children and adolescents was beyond all doubt, he wondered, in the case of adults on ordinary mixed diet, whether the presence of a certain amount of a particular vitamin was a very essential thing to be watched. An exaggerated importance seemed to be attached in the case of adults to getting vitamins in quantity, when, as a matter of fact, a very small amount of vitamin was all that was necessary to metabolism.

Sir WILLIAM HAMER said that he was sceptical with regard to a good deal of the work of vitamins until he had the experience of the war, which was very arresting. People in institutions, who had not the opportunities of adding to their food rations, certainly showed an increased liability to certain ills, and the incidence of infectious diseases rose.

Dr. KINGSTON BARTON said that the contemporary view as to rickets appeared to be going back to the view which was held fifty years ago. At that time it was believed that rickets was due to nothing more than excess of starch, and the children with rickets seen in private practice had been invariably stuffed with bread, undercooked flour, and the various patent foods of the period. Some physicians in those days showed that if starch were boiled, cooked, or converted to dextrine it could be made much less harmful for children.

Dr. W. CRAMER said that deficient diets not merely produced specific diseases, but a train of ill-health before those diseases emerged, the early stages being so elusive that no disease could be diagnosed. The reason why this was more obvious with children was that when a child was

ill from any kind of disease it stopped growing. He added that in his experiments he had never been able to convince himself that vitamin D was necessary for the adult; it seemed to be solely concerned with ossification.

Dr. THOMAS CARNWATH recalled the Irish labourers whom he knew during his residence in Ireland many years ago. Their normal diet consisted of potatoes and buttermilk, with perhaps sometimes a little pork and some tea, but they were fine strapping fellows. When they came over to England to help in the harvest they were overfed with protein, and it took them a couple of months to recover. He added that it was only by intensive investigation of diets that the food habits of sections of the community could be ascertained, their defects considered, and the slight modifications necessary to bring them into conformity with scientific principles could be made.

Dr. S. A. MONCKTON COPEMAN pointed out the importance, in addition to vitamins, of what he called the aesthetics of nutrition. There was not the slightest doubt that if a person enjoyed his food he was more likely to get benefit from it. Dr. Copeman also mentioned that for the first time the Zoological Gardens in London were now able to rear lion cubs. This was made possible because of a modification of the diet of the carnivora, who were now given small animals newly killed and without preparation. The result was that there were now half a dozen thriving young lion cubs in the gardens.

Dr. H. C. CORRY MANN pointed out the vast improvement in the health of London children of recent years, although the housing conditions in the slums of the metropolis were not greatly altered. Two food modifications were responsible, in his belief, for the change. One was the introduction of pasteurized milk, and the other was the fact that now a large supply of fruit (oranges and apples) was assured practically throughout the year. As a result, summer diarrhoea had practically disappeared, and so had abdominal tuberculosis. He also laid stress on the importance of drinking water. He believed that water was very important, because it allowed the necessary alkaline bases to be kept in suspension in the tissue fluids.

Dr. H. S. STANNUS believed that in many of the deficiency diseases there was a positive, not merely a negative, factor. He was convinced that pellagra was not a deficiency disease; it was a disease, unmasked in the absence of vitamin, due to the action of a toxin, and he thought the same was true of rickets and of beri-beri.

Fleet Surgeon W. E. HOME recounted some recent work carried out in Hamburg on the relation of food to the incidence of epidemic diseases, and mentioned that it had been found that infectious diseases were less likely to occur in the families of people who had gardens.

Dr. J. D. ROLLESTON asked whether any guidance could be given as to the much-vaunted vitamin content of wines and alcoholic drinks, a matter on which many statements were made, but authoritative information was lacking.

Professor MAJOR GREENWOOD, in summing up the discussion, remarked that the really practical question was that in this country, which was not self-supporting in the matter of food, but would starve very quickly if left to its own resources, the people did not receive the food they liked, but the food they were forced to buy as a result of the commercial conditions existing. Whether they always liked what they should like was another question.

AMYLACEOUS DYSPEPSIA.

AT a meeting of the Liverpool Medical Institution on November 20th, Dr. L. J. PICTON read a paper on amylaceous dyspepsia.

Dr. Picton said that dyspepsia was noticed to follow starchy meals. A starch-eating "habit" was recognized, and cure followed abandonment of the habit. The form of starch was important; unburst granules occurring in the gluten framework of the bread sponge were insusceptible to the influence of ptyalin. Slimy gastritis might be caused by excessive, especially unburst, starch as well as by infective catarrh. Delay might be caused not only by slimy gastritis, but also, normally, by eating starch and meat together (Pavlov) as in the conventional dietary. Satiety necessary for the tranquillity of the stomach was achieved by meat and greens, and an equal filling of starch and meat involved unnecessary digestive labours as well as delay. Greens pass quickly (Beaumont, 1833). Ptyalin digestion in the mouth and stomach "hopper" might start the cycle of digestive preparation. A peristaltic and metabolic "gradient" (Alvarez) was described, and the site of its pacemaker discussed. Inhibition of the pacemaker by sensitivation and toxic influences—for example, excess of starch—was suggested. Symptoms were due to delay, constipation, and peristalsis in the wrong direction to an abnormal degree through flattening or reversal of the gradient. Starch at one meal, meat and greens at another, were advocated in such dyspepsia.

Hirschsprung's Disease.

Mr. J. B. OLDHAM reported two cases of Hirschsprung's disease on which lumbar sympathetic ganglionectomy and ramisection had been performed two years ago with excellent results. The first patient, a girl aged 4, whose bowels were only opened every three to fourteen days in spite of prolonged medical treatment, had the left second, third, and fourth lumbar ganglia, with their rami and the intervening cord, removed, and since then the bowels had acted daily without the aid of drugs. The second had been attending hospital regularly for eleven years. Her bowels acted very irregularly. She frequently had to be admitted to hospital with attacks of acute obstruction. On many occasions faecaliths 4 to 7 inches in diameter had to be removed, and she had undergone colotomy, coloplication, colostomy, entero-anastomosis, and partial colectomy, but the condition always recurred. After bilateral lumbar sympathetic ganglionectomy and ramisection the bowels had continued to move regularly every day without the aid of drugs or diet. The technique of the abdominal approach to the sympathetic chain was described, and spinal anaesthesia was recommended. An account was given of the varying forms of surgical and medical treatment that had been tried from time to time and the unsatisfactory results they had produced. The similarity between Hirschsprung's disease, cardiospasm, congenital pyloric stenosis, and hypertrophic ileal obstruction was described, together with the physiological basis for the hypothesis that all these conditions were due to a hyperactivity, real or comparative, of the sympathetic nervous system. Mr. Oldham suggested that the excellent results obtained by sympathectomy in Hirschsprung's disease gave proof of the truth of this hypothesis.

In the discussion which followed, Dr. C. ALLAN BIRCH said he was interested in lumbar sympathetic ganglionectomy for peripheral vascular diseases, and asked whether this operation ever produced any effect on previously normal bowel movements. Dr. NORMAN CAPON remarked that earlier diagnosis of the condition was desirable, and pointed out that in the young baby abdominal distension was by no means invariable. It was noteworthy that at least one case had been reported in which severe vomiting and constipation had led to a mistaken diagnosis of congenital pyloric stenosis. Mr. PHILIP HAWE said that it seemed clear that sympathetic resection should have much more chance of success in conditions such as dilatation of the colon, in which sympathetic hypertonia was probably to blame, than the use of sympathetic resection in the treatment of spastic paralysis (Royle) where the underlying physiological principles are far from clear. There was some reason to expect that this operation would be extended to conditions of intestinal disorder other than Hirschsprung's disease. He had been associated with Mr. Monsarrat in a case of advanced colonic stasis which resisted medical treatment for years, but responded in a most convincing way to a lumbar sympathetic ramisection.

RENAL RICKETS.

AT the November meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland, with the president, Dr. H. F. MOORE, in the chair, Sir WILLIAM WHEELER, opening a discussion on renal rickets, referred to the literature on renal infantilism, on uraemia following osteotomy, and on the connexion between rickets and chronic interstitial nephritis. Within recent years a definite picture had been painted of an entity classified as renal rickets, in which the clinical *x*-ray and post-mortem findings

were typical. There were, however, greater variations, especially in the *x*-ray appearances and biochemical findings.

The first case he mentioned was that of a child, aged 7, in which renal rickets was suspected owing to the presence of albumin, red blood cells, and casts in the urine, combined with polyuria. There were rachitic changes in the chest and cessation of growth. The child had blue sclerotics, a condition not associated with rickets. *X*-ray appearances of the bones were not suggestive of the renal type of rickets, and, finally, the blood examination was against the diagnosis; the Wassermann reaction was strongly positive. The case was an unusual one, but congenital syphilis probably explained all the phenomena. The albumin was intermittent or transitory, as it was not found at a later date.

In another case the patient suffered from double congenital hydronephrosis. Tests were made with intravenous injections of uroselectan. There was a stone in the left kidney. The stone was removed, and the kidney was found atrophied and cystic, with a dilated pelvis. The *x*-ray report stated that there was pronounced dilatation of the pelvis and calyces on the right side, with moderate dilatation on the left, which contained the stone. The child had undergone five operations for rachitic deformities. The *x*-ray appearances of the bones approximated to the description of renal rickets given by various writers. After removal of the stone, albumin disappeared from the urine, but reappeared after an interval. The patient was aged 17, but was only 4 ft. 3 in. in height, no taller than an average child of 10. The prognosis was bad.

Antirachitic treatment, such as sunlight and cod-liver oil, was believed by some authorities to precipitate uraemia. Most of the cases recorded had come from the industrial areas in England.

Dr. A. G. THOMPSON said that there could be distinguished four clinical types of rickets: ordinary infantile rickets, late rickets, and two peculiar types associated with infantilism—namely, with coeliac disease and with renal infantilism. Nearly 90 per cent. of the inorganic matter of the bones of young children consisted of tricalcium phosphate, and if calcium and phosphorus were supplied in adequate amount in the diet good bone was laid down. In infantile rickets there was a negative balance with regard to these metals, as much being excreted as was absorbed. In addition, the blood phosphorus was very low (1 to 2 mg. per cent.), although the calcium was usually normal. Hence there was an upset of the calcium-phosphorus ratio, with consequent failure of ossification. This might result from several factors—for example, faulty diet, lack of vitamin D and sunshine, and bad hygienic conditions. In renal infantilism, although the conditions might be perfect, a peculiar type of rickets frequently developed. This was due to retention of phosphorus by the damaged kidney, with consequent upset of the Ca/P ratio. He showed tables giving the chemical constitution of the blood in both the cases compared with that of a normal child, a normal adult, typical active rickets, and typical renal infantilism. Dr. Thompson did not think that either of these cases was one of renal rickets, although both were very interesting and obscure types of infantilism. The first was probably mainly syphilitic, with perhaps a rickety element superadded. The second might be a case of healed rickets.

Dr. R. E. STEEN mentioned a case of renal rickets which he had seen in Great Ormond Street Hospital, and said that the thing which struck him about it was the marked arterio-sclerosis of the vessels. The blood urea in this case was high, and the blood pressure also was raised. He agreed with Dr. Thompson that, owing to the blood picture in these cases, it was uncertain whether they could be regarded as examples of true renal rickets. It was easy to see how antirachitic remedies would be useless in cases of renal rickets. In some of these cases some hyperplasia of the thyroid had been noted.

Diabetes and Phthisis.

Dr. J. LAIT showed a case of diabetes mellitus complicated with phthisis.

The case was a girl, aged 14, who had apparently suffered from untreated diabetes for over six months before entering hospital. Soon after admission she developed pyrexia and a cough. *X*-ray examination showed early cavitation of the left lung in two places, and the sputum contained tubercle bacilli. She had an acute and rapidly progressive tuberculosis, and the general condition was becoming gradually worse in spite of careful treatment for the diabetes. He induced artificial pneumothorax on the affected side, and though he did not at first succeed in obtaining complete collapse owing to adhesions, the child's general condition began at once to improve. Later on, he found it necessary to use high pressure of air (about 20 cm. water) in the pleural cavity, so as to stretch the recently formed adhesions, and now (about five months after induction) the left lung was almost completely collapsed. Recently a small, but harmless, pleural effusion had appeared on the collapsed side, which possibly assisted treatment. The diabetes was well under control.

The PRESIDENT said that in 1914, when Allen was working out the dietetic treatment of diabetes, Joslin noticed that in diabetic patients who developed tuberculosis and lost weight the diabetes improved, and in some cases there was a great increase of the glucose tolerance. Dr. E. T. FREEMAN said that it was remarkable to find such tolerance to high pressure in a child, especially on the left side. The patient had a fairly large cavity, which was relatively superficial, and the danger of pyopneumothorax was never far off. With regard to the effusion, if it could be increased in size and brought up to the level of the cavity in the lung, it was a great safeguard against rupture of the cavity.

Polycythaemia Vera Rubra.

Dr. CYRIL MURPHY, in showing a case of polycythaemia vera rubra, especially discussed its therapeutics. The case was as follows:

A cooper, aged 51, had complained since April, 1922, of inflammation of various joints at different times, with later the development of pain in the left upper part of the abdomen, of headache, of lightness of the head, and of vomiting on one occasion. In late 1923, physical examination revealed the following: cerise-coloured lips, lobes of ears, and finger tips, and a purplish corneal tint. The venules of the face seemed engorged, a feature still noticeable. The spleen extended four fingerbreadths below the left costal margin, and was very tender on examination. The left knee subsequently became swollen in a spindle-shaped manner, while the veins of the leg stood out in relief, and the left knee became almost cyanotic. This was accompanied by intense febrile reaction, which lasted for about fourteen days, uninfluenced by salicylates. Other joints, more particularly of the great toes and wrists, were subsequently involved, and arthritis became the chief symptom. Subsequent examination of the blood showed a negative Wassermann reaction, and a red blood cell count of over 11 million per c.mm. Later blood counts were: 1925, 9 million, with 30,000 leucocytes; 1927, 8 million, with haemoglobin content of 125 per cent. Benzol and various anodynes were of no value in the treatment. Later, sodium carbonate was given in 10 grain doses three times a day in an attempt to diminish the acidity of the blood. This treatment seemed to relieve the condition somewhat, and, given over a period of a year, lowered the blood count by 1 million. *X* rays to the long bones seemed to aggravate the symptoms, so that this form of treatment was early discarded. Venesection gave temporary benefit. The ingestion of phenylhydrazine hydrochloride, as used at the Mayo Clinic, was tried, 0.1 gram of the drug being given per week for over a year. The spleen was still enlarged and tender, and there was also a slight cerise hue noticeable on the lips. His blood pressure, which had been 168 systolic and 97 diastolic, was now 142 systolic and 81 diastolic, the blood count reading: red blood cells, 4,500,000, while blood cells 13,200, haemoglobin 80 per cent., colour index 9.

The PRESIDENT said he had treated four cases of this disease in the last three years—one woman and three men—his results coinciding in the main with those of Dr. Murphy. One man, aged 42, was given phenylhydrazine, but with little result. *X* rays were tried, also with little result, and then phenylhydrazine was tried again, and after about four weeks' treatment the patient began to improve. It was now found that 1/10 gram every seven to ten days was enough to keep the blood approximately normal. The second man, aged 44, had probably had an attack of thrombo-angiitis obliterans in the left radial artery, a condition described as a complication of polycythaemia, but supposed to be very rare. This patient had a course of *x*-ray treatment for three months, but the result so far as the blood was concerned was absolutely negative. He was now having phenylhydrazine, and was improving. Dr. Moore thought that in these cases *x*-ray treatment rendered the bone marrow more vulnerable to the action of phenylhydrazine.

Reviews.

FUNCTIONAL DYSPEPSIA.

By *Nervous Indigestion*,[1] which is the title of this book, Dr. ALVAREZ means any form of indigestion not due to organic disease. This, of course, is not the meaning always attached to the term. It is more usual to speak of dyspepsia not attributable to organic disease as "functional," and to reserve the term "nervous," if used at all, for those cases in which neither organic disease nor any alteration of the secretory or motor functions of the stomach can be demonstrated. To Dr. Alvarez, however, the presence or absence of alterations in the gastric functions is of no real importance, and it is significant that, throughout the book, such common terms as hyperchlorhydria, atony, and so forth, are not to be met with. He regards all disturbances of digestion which cannot be shown to be due to organic disease as being of "nervous," by which he means psychical, origin, and it is the object of the book to expound this thesis and the treatment which follows from it.

The first chapter is properly devoted to a consideration of the ways in which emotion can affect the digestive tract, with many illustrative examples, both experimental and clinical. In the second chapter a brief but sufficient account is given of the varieties of organic disease which must be eliminated before a diagnosis of nervous indigestion is arrived at, and it is interesting here to note that the author regards cholecystitis as now the commonest disease of the digestive tract. In making the diagnosis of the organic dyspepsias the importance of the clinical history is rightly emphasized, and some useful hints are given on history-taking. Radiography and other special methods are regarded as of secondary importance, and test meals are not even mentioned. The nature of the nervous factors—fatigue, emotional stresses, and so forth—which may lead to disorders of digestion are then considered in some detail and with numerous clinical examples, and the rest of the book is mostly taken up with treatment. The author describes admirably and with considerable humour the handling of nervous patients, and his directions for symptomatic treatment are clear, simple, and entirely free from fads. The over-use of roughage in the diet and of paraffin as a laxative are condemned, while stress is laid on the benefits derived from rest, a smooth diet, and sedatives. In a final chapter—which, along with the quotations at the beginning of each section, might have been omitted—suggestions are given for "further reading," in which among the authors recommended are to be found such curious juxtapositions as H. C. King, J. B. Nichols, D. H. Tuke, Hippocrates, and R. L. Stevenson!

We can cordially recommend this book both to the specialist and to the general practitioner. It treats of a difficult subject with clarity, humour, and common sense, and it expounds and illustrates the sound doctrine that the treatment of functional dyspepsia must be mainly by the methods of psychotherapy.

"ROSE AND CARLESS."

DESPITE increasing competition, *Rose and Carless' Manual of Surgery*[2] still remains first favourite with the average medical student, and is to be found upon the bookshelf of most practitioners. No book that had not exceptional virtues could reach a thirteenth edition (indeed, if reprints and foreign translations and editions be included the present is the twenty-fifth edition) without suffering some diminution of popularity, and we believe, therefore, that this work, taking it as a whole, supplies the needs of the student and of the practitioner more closely than any other.

The present edition marks a definite milestone in the history of the book, owing to the retirement of Mr. Albert Carless from active participation as editor-in-chief. As he says in his valedictory preface: "The constantly recurring testimony of those whom I have met in all parts of the English-speaking world makes me realize with much gratitude that this effort has not been in vain. . . . The old title will be retained, and I am glad to think that my name and that of my colleague Rose will still be remembered. The work has been my main contribution to the profession which I have loved so truly and striven to serve faithfully." Mr. CECIL WAKELEY, who has assisted in the production of the last two editions, now becomes editor-in-chief, and Mr. J. B. HUNTER has joined him as collaborator. The general arrangement of the book, with which most are familiar, remains, but since the eleventh edition was reviewed there have been considerable changes in detail. Many of the chapters have now been revised or written by specialists in particular branches; thus the opening section, on pure pathology, is in the hands of Dr. Carnegie Dickson, and the fresh illustrations of microscopical sections by Mr. Richard Muir are here particularly noteworthy. Mr. Negus has undertaken the section on diseases of the ear, nose, and throat, while the new chapters on the surgical affections of the eye and the surgery of the female genital organs have been written by Mr. Bishop Harman and Mr. Eardley Holland respectively. The chapter on military surgery appearing in previous editions has been omitted, but its place is taken by one on tropical surgery by Sir Frank Connor; the final chapter, on anaesthesia, has been brought up to date by Dr. Hadfield.

Radiograms seldom give good reproductions on ordinary paper, and in recent editions of "Rose and Carless" this difficulty has been overcome by the use of special art paper plates grouped together at the end of the volume. The radiograms thus collected are actually fewer in the present edition, but Dr. Graham Hodgson and the engravers and printers are to be congratulated on having produced one of the best sets of radiographic reproductions appearing in an English book. In the main part of the work there has been little alteration of text, but here and there paragraphs have been added to bring the matter up to date, and others describing ideas now obsolete have been deleted. The treatment of malignant disease by radium, of varicose veins by injection, and of burns by tannic acid have all received notice. The size of the page has been increased, and the familiar binding has given place to one of maroon cloth with gold lettering. We miss the dedication to Lord Lister—an omission breaking that tradition of continuity with the greatest of English surgeons which the book formerly upheld.

The medical student as well as the practitioner will find the latest edition of "Rose and Carless" a faithful vade-mecum.

TUBERCULOSIS IN CHILDHOOD.

THE second volume of ENGEL and PIRQUET'S Tuberculosis in Childhood[3] worthily completes a great undertaking—the survey and full record of modern knowledge of the disease in all its aspects. The first volume, of which a review appeared in this *Journal* on April 26th, dealt with bacteriology and pathology and with all the clinical expressions of the disease in their bewildering variety. There still remained the special methods of diagnosis, questions of prognosis, and therapeutics by prophylaxis and by treatment of the disease in its latent and active forms. These and other fragments of the subject form the material of the present volume, which, although hardly so big as the first volume, runs to 700 pages, and is the combined work of nearly forty contributors.

The importance of the subject, the careful editorial plan of the book, the reputation and authority of most of the contributors, and the lavish use of illustrations, have already been emphasized in our review of the first volume, and these qualities also mark the second volume. Thoroughness and copiousness (sometimes tending to overflow) are the hall-marks of the whole book. Thus, in the section on diagnosis, there is a careful account of all the methods

[1] *Nervous Indigestion.* By Walter C. Alvarez, M.D. London: W. Heinemann (Medical Books) Ltd. 1930. (Pp. xvi + 297. 15s. net.)

[2] *Rose and Carless' Manual of Surgery.* Thirteenth edition, edited by Cecil P. J. Wakeley, F.R.C.S.Eng., F.R.S.Ed., and John B. Hunter, *M.C.*, M.Chir., F.R.C.S.Eng. London: Baillière, Tindall and Cox. 1930. (6½ × 9½, pp. xii + 1592; 664 figures, 19 plates, 43 figures in *x*-ray supplement. 30s. net.)

[3] *Handbuch der Kindertuberkulose.* Herausgegeben von Prof. Dr. St. Engel und Prof. Dr. Cl. Pirquet. Zweiter Band. Leipzig: G. Thieme. 1930. (Imp. 8vo, pp. x + 887–1591; 170 figures. M.120.)

for using tuberculin in diagnosis; and also a detailed description of more recent tests, complement-fixation, flocculation, and sedimentation; the discussions on prophylaxis are enriched by a large series of observations upon children at the age of 7 years, infected and non-infected, and upon the fate and condition of the same individuals at the age of 20. The climatic treatment of tuberculosis is detailed with great elaboration: first, the physical qualities and physiological effects of sea air and mountain air, then a series of chapters dealing with sanatoriums all round the seaboard of Europe and over the Alps. There is a chapter on the climatic treatment of extra-pulmonary tuberculosis by Dr. Bernhard of St. Moritz; and special surgical measures, both orthopaedic and the more recent surgical operations in pulmonary tuberculosis, are fully described in two other chapters. Lastly may be mentioned epidemiological studies, based on mortality statistics, post-mortem examinations, and the Pirquet test; and an account of the laws and statutes and the medical and social organizations for the control of the disease, both in the Old and in the New World.

This enumeration, not complete, of the subjects of the second volume will suffice to indicate the aim and the scope of the whole book—the complete presentation of modern knowledge of tuberculosis in childhood. The book is a great and valuable storehouse of information on a great and important subject. Both editors and contributors deserve the thanks and the congratulations of the medical world on the conclusion of their labours.

THE HAIR AND ITS TROUBLES.

DR. O'DONOVAN'S treatise on *The Hair*[4] is the most interesting on the subject that has been published for some time. He describes the development of the hair and all the curious variations in pattern of growth, pigmentation, etc., which are found, and also quotes instances of the rare abnormalities and freaks to which it is subject, such as ichthyosis follicularis and monilethrix. He has not neglected, however, the more practical side of the subject. The diagnosis and treatment of ringworm, alopecia areata, and the other conditions commonly brought to the notice of both the general practitioner and the dermatologist are fully discussed in the light of the author's own wide experience. Writing on the vexed question of the thallium treatment of ringworm, he advises that this should only be used for children too young to be submitted to *x*-ray epilation. He gives a good summary of the treatment of hypertrichosis, with a warning that cannot too often be repeated against the dangers of employing *x* rays for this condition. Although the medical profession is now well aware that *x* rays must never be used for the destruction of superfluous hair, there is good reason to believe that quacks are still able to persuade a good many women, especially in America, to submit themselves to the rays in order to rid themselves of this distressing disfigurement. Dr. O'Donovan also has an interesting chapter on hair dyes and dermatitis, a matter on which dermatologists are continually being consulted. His advice is quite sound, but we rather think that he is unnecessarily sweeping in condemning all metallic hair dyes as potentially dangerous. On the other hand, there is no doubt about the risks to which those who employ the phenylenediamine derivatives are exposed, and in consequence hairdressers nowadays habitually test their clients in advance by applying the dye to a small area of the skin over the mastoid process. Very properly Dr. O'Donovan draws attention to the public health aspect of barbers' shops, and quotes the model regulations for the conduct of hairdressers' saloons in the City of London. It is a great pity that such regulations are not in force universally in this country. Many barbers' shops are a source of great danger. The American public health authorities are much in advance of ours in this matter.

In conclusion, we must add that this is a well-written and very readable account of the subject; the only criticism we have to make is that here and there it is a little difficult to be certain whether the author is stating his own opinion or quoting that of others. There is one curious slip on page 9 where it appears that ultra-violet and polarized light are identical. The volume is well printed, and the numerous illustrations are well reproduced and appropriate. We commend the book to the profession.

[4] *The Hair.* By W. J. O'Donovan, O.B.E., M.D.Lond., M.R.C.P. London: J. and A. Churchill. 1930. (Demy 8vo, pp. x + 218; 40 figures. 12s. 6d. net.)

"DE MORTUIS."

DR. C. MACLAURIN, who was formerly lecturer on clinical surgery in the University of Sydney, publishes under the title *De Mortuis*[5] a series of essays on the conditions, pathological and otherwise, which may have influenced the lives of many persons eminent in history. The essays have already met with general approval; the first group he called *Post Mortem*. It was published in 1923, and has been reissued nine times; the second appeared as *Mere Mortals* in 1925, and a second impression was called for within the year. It is clear, therefore, that there is a large circle who wish to know more about the personal life and illnesses of historical personages. The present volume contains 276 pages, with 12 whole-page illustrations, but needs an index. It is written in a light vein, and the style sometimes becomes colloquial. It is intended more for the general reader than for the specialist in the history of medicine. The author, living at a distance from original documents, has been obliged to content himself with what others have said—not always correctly—and to draw his conclusions from their statements. In many of the essays, however, he has elucidated his problems by knowledge drawn from clinical experience as a medical man in hospital and in private practice. Throughout the book Dr. MacLaurin shows that he has read widely, and he puts his reading to excellent purpose. It is notorious that doctors differ, but everyone will agree that he is rather hard upon Sir Thomas Browne, about whom he says: "I might almost feel justified in saying that *Religio Medici* is generally considered by doctors to be a farrago of quackery, mysticism, credulity, and astrology, put into gorgeous and quite unnecessarily obscure language; full of sound and fury; signifying nothing. Probably Browne was unconsciously remembering the teachings of some old lady who had impressed the truth upon him in early infancy, probably with her slipper." Of such sentences it can only be said with a sigh, *Sic transit gloria mundi.*

The net result of Dr. MacLaurin's essays is that syphilis and arterio-sclerosis explain many of the tragedies of history. He accepts without reserve that Henry VIII acquired syphilis. In the light of the latest researches the fact is no longer tenable, and if it is untrue the whole story of "The tragedy of the Tudors" falls to the ground, for Dr. MacLaurin attributes the early death of Edward VI to tubercle grafted upon a syphilitic inheritance. Mary, he thinks, died of "degeneration of the heart and arteries, not necessarily, but probably syphilitic and inherited from her father." The difficulties in connexion with the life and actions of Queen Elizabeth he explains by saying that "her endocrine balance was abnormal," without further comment, though this does not carry matters very far. Ivan the Terrible—a criminal lunatic—was, in Dr. MacLaurin's opinion, a syphilitic, and to a spirochaetal infection of the brain the worst of his actions are attributed. But his father was at least a "borderline" case, and Ivan had an imbecile brother. Benvenuto Cellini, on the other hand, is acquitted of having acquired the disease, in spite of his own confession to the contrary. In considering the illnesses of Mr. and Mrs. Pepys, Dr. MacLaurin states correctly that there is no evidence of syphilis, but omits to draw the conclusion that Mrs. Pepys had an attack of bartholinitis. Dr. Johnson appears to have been a psychasthenic, and "his convulsive tics were the result of the unconscious memory of a sensitive little boy shrinking from the ordeal of being touched for the King's Evil by Queen Anne." It is all very interesting, and may or may not be true. The whole book gives food for thought, and is well worth reading.

[5] *De Mortuis.* By C. MacLaurin, M.B., C.M., F.R.C.S.Ed. LL.D. London: J. Cape. 1930. (Post 8vo, pp. xiv + 276; 12 plates. 7s. 6d. net.)

NOTES ON BOOKS.

FIVE years have passed since the fourth edition of Dr. LETHEBY TIDY'S *Synopsis of Medicine*[6] was published; thus in the fifth we find much new material and many small changes. The result is the production of a thoroughly reliable catalogue of all the diseases within the province of the physician. The author makes no claim to erudite literary achievement. His aim is to give to students a quick and efficient reference to systematic medicine, and he succeeds admirably.

We have received for review the twenty-first edition of HARE'S *Text-Book of Practical Therapeutics*.[7] The popularity of this work is indicated both by the number of editions and by the fact that it is only three years since the twentieth was reviewed in these columns. The general form and arrangement of the textbook have been left unaltered, but it has been carefully revised. As the author points out in his preface, it is really remarkable how many valuable new methods of treatment appear in the course of a few years. For example, the following new methods are described in this edition: the use of salyrgan, of calcium salts, and of ammonium chloride as diuretics; the treatment of chancroids by tartar emetic; the use of viosterol in rickets and of ventriculin in pernicious anaemia; the separate employment of the oxytocic and vasopressor principles of the posterior lobe of the pituitary. These examples also show that the author has taken care to keep abreast of the most recent advances in medical science. He claims as his first object the provision of a textbook useful to students and to practitioners, and it is evident that his efforts have met with very general appreciation.

Ephedrine and Related Substances,[8] by CHEN and SCHMIDT, is No. XVII of Medicine Monographs. The book summarizes the results of experimental and clinical investigations on this important new drug, and also contains a full bibliography that occupies twenty-three pages. This important work was discussed in an annotation in our issue of May 10th (p. 873), and its appearance now as a separate monograph is very welcome.

A little book by Lady WILLISON of Toronto will be of interest to some of our readers. It is called the *Golden Treasury of Famous Books*,[9] and is intended to be an encouragement to good reading, and an introduction, especially of boys and girls, to the world of worthy books. It should be successful in its object, for it surveys a very wide field and offers a surprisingly varied choice where tastes must necessarily differ so greatly. The author seeks to interest young people, not merely in certain famous books, but also in the personalities and lives of their writers; and offers guidance both in the wise choice of tales which are commonly regarded as appealing specially to boys and girls, and also among most of those other literary types which may afford at least equal delight to young people who can be led to understand their form and purpose. These are matters not entirely remote from the functions exercised by a family physician in his daily practice, and doctors and patients alike may well find help in Lady Willison's pages.

A German-English Technical and Scientific Dictionary,[10] by A. WEBEL, is much wider in its scope than the title suggests. It includes many words which, though not technical in themselves, are likely to be met with in technical works and papers, and some whose place in a technical and scientific dictionary seems rather difficult to account for. To take a few examples at random, definitions are included of *feier*, *gram* (meaning grief or aversion), and *kurz*, and of a good many other words which are adequately defined in the ordinary German-English dictionary. This tendency to overload dictionaries is to be deplored. The English-speaking reader of German technical and scientific papers does not need to turn to a dictionary for the meaning of everyday words, and their inclusion only serves to add to his labour in looking up the words he does want. In appendixes the author gives a list of atomic weights, specific gravities, melting points, and boiling points of elements; tables of technically and commercially useful abbreviations, signs, and symbols; and a large botanical section of over five thousand references, containing in triple column pages the scientific terms with their English and German equivalents. Roman type is used throughout the volume, and the printing, paper, and get-up are excellent.

In a thesis on the treatment of pernicious anaemia with desiccated hog's stomach,[11] Dr. J. D. G. DU PREEZ gives an account of the work of Sturges and Isaacs, Connor, and others, and records his observations on the application of the treatment in Professor Snapper's clinic at Amsterdam. The series studied consisted of eleven patients—seven females and four males—of ages ranging from 31 to 71, all of whom were subjected to the treatment and derived remarkable benefit from it. Dr. Du Preez concludes that the treatment is specially suitable for patients who do not react to liver therapy, and has the added advantage that hog's stomach is much cheaper than liver.

In his monograph on atrophic rhinitis[12] Dr. MONSCOURT has presented an elaborate description of the etiology, symptomatology, and complications of this disease. This includes the geographical and hereditary background on the one hand, and every possible associated condition on the other. The book, however, is really a plea for treatment by potassium iodide, based on the theory that it is associated with varying degrees of thyroid insufficiency, and often with goitre. The author seems to have had much success with the method advocated, and claims 95 per cent. of cures. It is curious that in recent years this disease, which formerly was the bane of out-patient departments for diseases of the nose and throat, has almost disappeared. It is now only seldom seen even in a mild form, and patients never present themselves in the repulsive state so common fifteen to twenty years ago. The disease therefore has now lost much of its importance in this country, but the author seems to find it still frequent in the mountainous districts of France.

[6] *A Synopsis of Medicine.* By Henry Letheby Tidy, M.D., B.Ch.Oxon., F.R.C.P.Lond. Fifth edition, revised and enlarged. Bristol: J. Wright and Sons, Ltd.; London: Simpkin Marshall, Ltd. 1930. (Cr. 8vo, pp. xv + 1032. 21s. net.)

[7] *A Text-Book of Practical Therapeutics.* By Hobart Amory Hare, B.Sc., M.D., LL.D. Twenty-first edition, enlarged, thoroughly revised, and largely rewritten. London: H. Kimpton. 1930. (6 × 9½, pp. x + 1104; 145 figures, 6 plates. 36s. net.)

[8] *Ephedrine and Related Substances.* By K. K. Chen and Carl F. Schmidt. Medicine Monographs, vol. xvii. London: Baillière, Tindall and Cox; Baltimore: The Williams and Wilkins Company. 1930. (Med. 8vo, pp. 121. 11s. 6d. net.)

[9] *Golden Treasury of Famous Books.* By Marjory Willison. Toronto: The Macmillan Company of Canada, Ltd. 1929. (Cr. 8vo, pp. xvi + 264.)

[10] *A German-English Technical and Scientific Dictionary.* By A. Webel. London: G. Routledge and Sons, Ltd. 1930. (Sup. roy. 8vo, pp. xii + 887. 36s. net.)

[11] *Behandeling van pernicieuse anaemie mit poeder van gedroogde varkensmagen.* Door J. D. G. Du Preez. Amsterdam: N. V. Swets and Zeitlinger. 1930. (6 × 9½, pp. 79.)

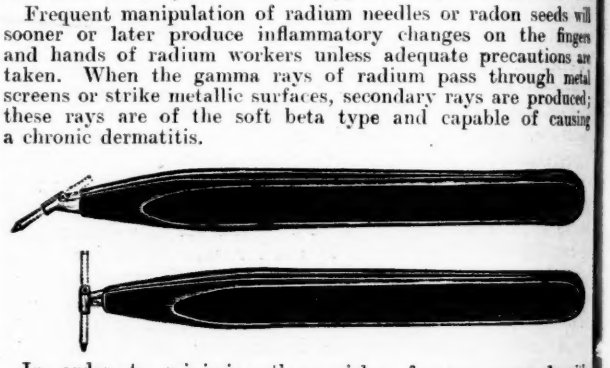
[12] *La Rhinite Atrophique et son Traitement.* Par H. Monscourt. Paris: N. Maloine. 1929. (5½ × 7¼, pp. 228. 20 fr.)

PREPARATIONS AND APPLIANCES.

FORCEPS FOR HOLDING RADIUM NEEDLES AND RADON SEEDS.

DR. ROY WARD (Radium Institute, London) writes:

Frequent manipulation of radium needles or radon seeds will sooner or later produce inflammatory changes on the fingers and hands of radium workers unless adequate precautions are taken. When the gamma rays of radium pass through metal screens or strike metallic surfaces, secondary rays are produced; these rays are of the soft beta type and capable of causing a chronic dermatitis.



In order to minimize these risks, forceps covered with bakelite have been designed for this purpose. The ends of the needle-holding forceps are either T-shaped or set at an angle. The radon seed holding forceps are made in such a way that a seed once grasped cannot jump out.

These instruments are boilable, and have been in use in all departments of the Radium Institute for nearly a year. They were made for me by the Genito-Urinary Manufacturing Company, Devonshire Street, W.1.

SOLUBLE COFFEE POWDER.

We have received from the Bantam Products Ltd. (Wortley, Leeds) a sample tin of Bantam coffee, which has the advantage of being prepared in the simplest possible fashion. It is in powder form; all waste grounds have been extracted, so that it dissolves instantly in hot water or milk, and quite readily in cold water. The manufacturers claim that when a patient is beginning to tire of the routine of milk a small quantity of Bantam coffee makes it much more palatable. We found that a test cup was free of the harsh tang too often associated with ordinary coffees, and, moreover, there were no troublesome grounds to dispose of. Those who have no time to spend over the correct and satisfactory preparation of coffee on old-fashioned lines should welcome this product.

THE HEALTH OF LONDON.

REPORT FOR 1929.

THE report of the county medical officer of health and school medical officer, Dr. F. N. Kay Menzies, records the state of the public health for London during 1929.

Births and Deaths.

The population of the County of London in the middle of 1929 is estimated by the Registrar-General to have been 4,430,000, including 12,100 non-civilians; there has been a decrease of 37,700 of the civilian population since the middle of 1928. The births were 70,089, equivalent to a birth rate of 15.8 per 1,000 as against 16.2 in 1928; this is the lowest birth rate ever recorded in London, the number of births being fewer by 887 than in 1918, when the influence of the European war was at its height. The City of London has the lowest birth rate, 7.7; then follows Holborn, 10.2, with the City of Westminster very close, 10.5. Chelsea has a birth rate of 11.7. At the other end of the scale are Shoreditch, 20.1, Bermondsey, 19.18, Poplar, 19.2, Finsbury, 19.0, and Bethnal Green, 18.7. The deaths were 62,889, giving a death rate of 14.2 per 1,000 compared with 12.1 in 1928; this marked increase was due to the severe influenza epidemic, associated with an unusually rigorous winter, and, in addition, the epidemic prevalence of whooping-cough, which was mainly responsible for the rise of the infantile mortality rate from 67 in 1928 to 71 in 1929. For the whole of the county the death rate from whooping-cough was 0.26 per 1,000 of the civil population. The highest death rate occurred in Paddington, where it was 0.50, the next in Finsbury, with 0.41; in Shoreditch, Islington, and Kensington the rate was 0.40, and in St. Pancras it was 0.37; Lewisham and Stoke Newington escaped with a rate of 0.10, and Hackney with 0.11.

Although the weather conditions in the year under review were such that an epidemic of infantile diarrhoea might have been anticipated the rise was small compared to the result of such weather conditions in 1911. A closely reasoned review of the apparently high tuberculosis mortality of mental hospital patients shows that, considered in the light of the death rate from all causes, the mortality from phthisis in the L.C.C. mental hospitals does not differ materially from that of the general population. Fatal street accidents continued to increase in number, the total being 814 in the fifty-two registration weeks of 1929, as against 747 in 1928.

Small-pox.

The mild type of small-pox which invaded London during 1928 became established in many parts of the metropolitan area during 1929; no fewer than 1908 cases were notified. The eastern boroughs, Stepney (489), Bethnal Green (262), Shoreditch (246), Poplar (158), with Southwark (153), and Camberwell (117), had the largest number of cases; the western boroughs almost escaped, Fulham and Chelsea having none; in the northern area St. Marylebone had only three, and Hampstead none.

The discovery of cases in the in-patient and out-patient departments of hospitals was of frequent occurrence, and led to much dislocation of hospital regime; several cases occurred also among employees of large firms and business houses, and a number of common lodging houses (especially in Stepney) were affected. No vaccinated child under 11 years of age contracted small-pox. Nine deaths occurred in cases admitted to the Metropolitan Asylums Board's hospitals. The *Tuscania* outbreak of forty-five primary cases of virulent small-pox causing eight deaths is reviewed; no deaths occurred in London among those who were infected on the ship. One fatal case of small-pox occurred in Woolwich shortly after this time, possibly connected with small-pox introduced by shipping. The fact that the virulent variety of small-pox is comparatively seldom introduced into London, and that, even when such cases do occur, the disease rarely spreads to any material extent, provides eloquent testimony to the vigilance of the port authorities and to the energetic measures taken by the metropolitan boroughs.

Diphtheria.

The notified cases of diphtheria numbered 11,788 in the registration year, an attack rate of 2.7 per 1,000; the number of deaths was 350, as opposed to 399 in 1928, making a case mortality for 1929 of 3 per cent. During the year immunization clinics were started in the thirteenth and fourteenth boroughs to adopt this procedure; fifteen metropolitan health units have not yet moved in this direction. In the aggregate, in metropolitan and Greater London, about 26,000 individuals, the great majority under the age of 15, are now known to be, or are being, protected against diphtheria by means of the toxoid-antitoxin inoculation.

Enteric Fever.

A further diminution in the incidence of these diseases is recorded; 351 notifications were received in the fifty-two registration weeks, as compared with 580 in 1928. The deaths in the calendar year numbered 45, as against 51 in 1928. A short account is given of the outbreak which occurred during the latter part of September in Lewisham, Beckenham, and Penge; there were 124 cases, seven being fatal. The evidence strongly suggests that the outbreak was caused by a "carrier" infecting cooked food (ham), but by the time the probable source of infection was traced this carrier condition had ceased.

Acute Rheumatism in Children.

Dr. Mabel Russell, writing on rheumatism as it can be explored by the medical inspector in the schools during special inquiry, states that her figures relating to 632 girls in two Chelsea schools show that roughly one-third of those with a history of "growing pains" had clinical signs—that is, degrees of anaemia and myocardial debility—which were possibly due to subacute rheumatism. That acute rheumatism in children is simulated by many other diseases is shown from the fact that to the Queen's Hospital Clinic children have been sent with lymphatic leukaemia, osteomyelitis, traumatic myositis ossificans, fracture of the tip of a malleolus, an ossifying haematoma round the ankle-joint, flat-foot, cervical rib, psoas abscess, tonsillar sepsis, pyelitis, cystitis, and muscular weakness after illness. Every medical practitioner will sympathize with the school doctor who sent a child to the rheumatism clinic with one of the following heart conditions, which Dr. D. W. Winnicott agrees require close examination: congenital heart disease, systolic murmurs at the base end of the apex which can be ignored, irregularities originating in the sinus and not indicative of disease, premature contractions of unknown causes but not rheumatic, attacks of paroxysmal tachycardia; tachycardia or temporary dilatation or pain in the heart region due to pathological anxiety. Cases are seen at rheumatism supervisory clinics at the Hospital for Sick Children, Great Ormond Street; Royal Waterloo Hospital; Queen's Hospital for Children, Hackney; Elizabeth Bullock Centre, and Downham Centre. Authorities other than the London County Council have established clinics at Paddington, Kensington, and Marylebone. Other centres open now, or to be opened shortly, are, or will be, at Woolwich, Hammersmith, Putney, and at King's College Hospital. Special arrangements are made for in-patient treatment at Queen Mary's Hospital, Carshalton, where there is a set or "unit" of acute cases, and another set of subacute cases. At High Wood Hospital, Brentwood, subacute cases are dealt with. In doubtful rheumatic cases and in rheumatic cases between attacks in the absence of active carditis the authorities very logically try to get a holiday for each debilitated child when the debility seems to be largely the result of home conditions.

Over-pressure in School Children.

The report bears out the view held generally by school medical workers that while the public elementary school child does not suffer from over-pressure, the secondary school child does. We hear again the same tale—home work and long-distance travel to school. Dr. Menzies does not say in so many words that there should be co-ordination among a child's teachers as to the amount of home work

[1] London County Council. Annual Report of the Council, 1929. Vol. iii. Public Health (including the Reports for the year 1929 of the County Medical Officer of Health and School Medical Officer, Main Drainage, and Housing). London: P. S. King and Son, Ltd., or through any bookseller. 1930. No. 2731. 2s. 6d.

set—nor does he point out that as much as possible all school children should come to school for the day and not for the session. "For healthy development children want spaces of free and undisturbed time" (Lord Grey of Fallodon). If this be so a change may be wanted in our great public schools, where we are told by their medical and teaching staffs that almost every minute of the day is filled up.

Chronic Invalidity among School Children.

A valuable measure of the morbidity of the children of the nation is provided by the chronic invalidity returns relating to school children. The school attendance department reports each month the names of all children who have been absent from school entirely on account of health for three months and upwards. Each year the number of sick children remaining on the list in the month of November is analysed. The numbers remain constant: 1929, 2,210; 1928, 2,200; 1927, 2,006; 1926, 2,239. Rheumatism and associated conditions, including heart disease, account for 30.8 per cent.

Mental Deficiency Acts, 1913–27.

At the end of the year the Council was dealing with 5,560 cases. Of 941 alleged mental defectives medically examined, 342 were over 16 years of age; some of these latter were children leaving special schools for the mental defective as cases to be considered by the Education Committee with a view to notification relative to supervision, guardianship, or institutional care. The numbers of individuals over 16 years of age otherwise dealt with is apparently not given. One person (over 16 years of age) out of the 941 was found to be a moral defective; sixty were found not to be mentally defective. Eight occupation centres are provided by the London Association for Mental Welfare and the Central Association for children unable to benefit by the education provided at the special schools for the mentally defective; altogether 154 of these children were medically inspected by the school doctors during last year; from the comparative figures and other information given they seem to have better teeth than the ordinary school children, but more discharging ears, more deformities, and more squints. The L.C.C. has made a grant towards the cost of employment of guides where necessary to convoy children to and from the centre.

Other valuable items in Chapter II of the report include an analysis of the causes of death and premature retirements for ill-health during the ordinary working period of a teachership occurring among the teaching staff, made by Dr. Letitia Fairfield. More or less untimely deaths occur in one man teacher in 244, but less in women, one in 317, but while only one man in 525 breaks down, in women the figure is one in 194.

Nursing Homes Registration Act, 1927.

At the end of the year there were 273 premises on the register of nursing homes; apparently, in addition, there are 118 other premises which are not conducted for profit, and which are exempted for periods of a year from the provisions of the Act by the Council. A number of premises are being used for the accommodation of certified mental patients. Such premises are under regular supervision by officers of the Board of Control, and, in order to avoid unnecessary dual inspections of such premises, it was decided that, provided that the premises used for the accommodation of patients in "single care" were not used for the accommodation of any other type of patient, it would be unnecessary for owners of such premises to make application for the registration of their premises as nursing homes. Arrangements have been made to keep the Board of Control informed of all premises throughout London which appear to be used for the accommodation of mental cases, whether certified or not. The new by-laws issued by the London County Council were approved on March 1st, 1929. One keeper was prosecuted successfully for failure to exhibit the certificate of registration in a conspicuous position, and also in respect of obstruction of the Council's inspector in the execution of his duties under the Act. In London three part-time assistant medical officers carry out the work of inspection and reinspection of premises used as general nursing homes; the premises used mainly for the reception of maternity patients are inspected by the assistant medical officers who superintend the midwives. Inquiries with regard to unregistered premises suspected as being used as nursing homes are carried out by inspectors attached to this department; these inspectors, who are qualified sanitary inspectors, also inspect all premises in respect of which applications are received for registration as nursing homes with a view to obtaining detailed information as to the sanitary conditions and the general maintenance of the premises.

Sanitary Administration.

The systematic examination of the water in the Thames by the chemical staff of the L.C.C. showed that the "drought" experienced more or less during the first nine months of 1929 had a prejudicial effect on the condition of the water, especially in the vicinity of the sewage outfalls. Here as much as 60 per cent. of the water at high tide is sea water. This figure indicates how much the removal of sewage effluent from the river is retarded during seasons of drought. Fortunately the L.C.C. has now embarked upon a policy of installing successive purification units. In outdoor swimming baths not filtered with a filtration plant much difficulty was experienced in keeping the water in good condition; the loss of transparency is due not only to soiling of the water, but also to the separation of calcium carbonate as the result of photosynthesis. It is no easy task to destroy green growths by chemicals. In addition to the experiments with the modified two-tier channels for the treatment of sewage with activated sludge, some work has been done on digestion of ordinary sewage sludge such as is sent to sea. It was found that the behaviour, on digestion, of sludge from the Council's works was similar to that observed at other places in this country and in Germany and the United States of America. After a rather long preliminary period gas formation began, and although not at first combustible, the gas, after a time, contained a larger proportion of combustible constituents, the calorific value of the gas obtained during this period being about 750 British thermal units per cubic foot. The production of carbon dioxide during the early stages of digestion can be greatly reduced by the addition of air-slaked lime to the fresh sludge. The production of gas goes down to inappreciable amounts in cold weather. During the acid stage of digestion much separation of solid matter takes place, but as the solid matter cannot be relied upon either to settle to the bottom or to rise to the surface, no practical means of de-watering has yet been based on these observations. These experiments were on a very small scale, but the results are sufficiently promising to show the desirability of further investigations on a works scale.

In addition to the maintenance of deposit gauges in six open spaces in the county, observations of visibility have been made. Examination of the horizontal range of visibility to the fog shade indicated on Owen's recording filter shows that the mean monthly distance of the farthest visible objects falls off rapidly until a mean monthly fog shade of 1 (=0.02 mg. suspended carbon per cubic metre) is reached when the limit of visibility is about a mile. Greater amounts of soot have a lessened effect on visibility, and it is clear that some such point must be reached, since the possible range becomes very small and there are degrees of invisibility. A real but less marked correlation was observed between the total deposit collected in a gauge near the County Hall and the sulphate in that deposit and the visibility in the direction of the gauge.

Housing.

Dr. Menzies considers that the first step to be taken to diminish the unsatisfactory housing conditions in London is the comparatively inexpensive one of closing basement rooms. "Without any question certain underground dwellings in London are the most insanitary houses to be found in the metropolis. . . . The most insanitary areas do not, and never have provided such intense degrees of insanitariness as are to be found in the case of the underground rooms under consideration." There are about 30,000 basement dwellings in London which are considered unfit for human occupation, not all of them separately occupied; they are housing some 100,000 persons.

British Medical Journal.

SATURDAY, DECEMBER 6TH, 1930.

THE USES OF RADIUM IN SURGERY.

IN his recent broadcast talk on "The future of surgery" Lord Moynihan remarked that "surgery had taken radium into partnership." The remark is significant as indicating the attitude of the titular head of the surgical profession towards a method of treatment which, until a comparatively recent date, was regarded as the special province of the radiologist; a method, moreover, which had but little part in dealing with those forms of disease in any degree amenable to surgery. During the last eight years the surgical standpoint has shifted, until at the present time surgeons have definitely abandoned more than one operation in favour of radium treatment, being satisfied that the selective powers of radium can do what cannot be achieved by the unselective scalpel. But even eight years is a brief period in which to establish precisely the best methods of applying the newer forms of radium treatment, and to assess accurately their curative value in relation to that of surgical operations.

Radium technique is still changing year by year in its detail, as evidence accumulates, and the workers in the different clinics where radium is at all extensively used must frequently meet to exchange ideas and experiences, and to present to the world their interim reports on the results obtained. Of great value, therefore, is the series of papers printed in this issue of the *British Medical Journal*, containing communications made to the Surgical Section of the British Medical Association, under the presidency of Lord Moynihan, at the Winnipeg Meeting. The subject under discussion was primarily the radium treatment of malignant disease, and the greater part of this field of investigation was well covered by surgeons who are acknowledged experts in their particular branches of "radio-surgery." It is obvious that radium implantation can never be expected to perform the miracle of controlling malignant disease which has progressed beyond the stage of localization in accessible parts of the body, so that many patients will not be cured, although the outward and visible signs of disease have disappeared. This unavoidable limitation is partly responsible for the wave of disillusionment which is clouding the estimation of the value of radium in the popular mind at the present time. Mass opinion, always prone to rush from one extreme to the other, acclaimed radium a year ago with exaggerated hopes; the cold douches recently administered in pronouncements emanating from the Radium Commission have been a wholesome corrective; but it is probable that these have, for the time being, pushed mass opinion too far in the other direction. Meanwhile, the medical profession must soberly examine the evidence laid before it, and await the final verdict which only time can give.

Radium treatment has unquestionably achieved its highest successes in dealing with carcinoma in the buccal cavity, reported upon by Dr. Douglas Quick, Mr. Stanford Cade, and Dr. Birkett, and with carcinoma of the cervix. In these two regions the mutilating operations formerly practised have been virtually abolished. This is a great step forward, even though final mortality rates may not have been materially altered. In the case of carcinoma of the cervix, progress is still limited by the difficulty of irradiating the lymphatic extension of the disease in the pelvis. In buccal carcinoma, where the primary disease has proved remarkably amenable, the lymphatic extensions, under the jaw and in the neck, are accessible, but have so far, for no very obvious reason, not been easily controlled by irradiation. Dr. Birkett even goes so far as to advocate two methods of approach, neither of which calls for the use of radium. If no enlarged glands can be felt he believes that no treatment of the neck should be undertaken. If at any stage enlarged glands are present, then he asks a surgeon to carry out a very extensive dissection of the neck. Dr. Quick and Mr. Cade, on the other hand, advocate treatment in every case by *x*-ray therapy, or with the radium bomb, or by the use of radium, either by "blind needling" as prophylactic treatment, or by needling after exposure of the glands where they are enlarged. Where practices are so divergent as these, clearly no settled opinion can be expected for some time to come, but in the meantime the sufferers may at least be allowed to keep their tongues. In treating carcinoma of the rectum Sir Charles Gordon-Watson is still unable to recommend radium treatment when operation is possible, owing to the uncertainty of its effect. Radium is therefore chiefly reserved for those patients in whom an inoperable lesion may be made operable, and for the palliation of very advanced disease. An exception, however, is made in favour of radium for squamous-celled carcinoma of the anal margin. Here the results have been almost uniformly satisfactory. Some novelty was introduced into the discussion by the reports upon radium in genito-urinary disease, presented by Mr. Frank Kidd and Mr. Clifford Morson. It appears that in treating carcinoma of the bladder results are still very indefinite, and in certain cases Mr. Kidd has found that the disease was accelerated by the treatment, so that he ends his report on a note of warning. Mr. Morson, on the other hand, was able to report very satisfactory results in treating carcinoma of the penis, and it is likely that here another mutilating operation is about to be abolished.

As the success of radium treatment of cancer clearly depends to a large degree upon the accessibility of the possible lymphatic extensions, it might reasonably be expected that carcinoma of the breast, at any rate in its earlier stages, would be particularly open to attack. It is therefore the more to be regretted that exigencies of time and space did not allow of the presence of anyone at the meeting who could speak with authority on the radium treatment of this region of the body, such as has been in progress for some years at St. Bartholomew's Hospital and elsewhere. The whole discussion at Winnipeg avoided any undue show of enthusiasm for radium treatment, but it demonstrated that solid advances have been made, and that further advances may be looked for in the future.

SCIENTIFIC HONOURS.

RATHER more than a year ago we recorded the award of the Nobel Prize for Medicine to Professor Eijkman and Professor Sir Frederick Hopkins. A few weeks ago Professor Eijkman died. In him the world, as well as Holland, has lost one of the pioneers of modern science, and his countrymen will certainly have the sympathy of his fellow workers in every land. The Nobel Prize is one of the very few scientific honours that carry with them substantial material reward, unmixed with heavy duties and responsibilities. It is sad that, coming to him as it did at the end of an active life, Eijkman should have had only so brief a period to enjoy his success. To Eijkman's colleague, Sir Frederick Hopkins, has fallen yet another honour, that of the Presidentship of the Royal Society. If the Nobel Prize is the greatest international honour to which a scientific man can aspire, that of President of the Royal Society is perhaps the greatest that (if he be an Englishman) his countrymen can bestow upon him. A glance at the list of past Presidents of the Royal Society is sufficient assurance that he who fills that office adds his name to a roll which, stretching back into the seventeenth century, includes a group of scientific men, whose collective achievement overshadows that of which any other country can boast. There have been forty-two presidents since 1663. For the first century or so, the choice was by no means confined to men of science, for in the list the first dozen names include those of Sir Christopher Wren and Samuel Pepys, as well as Sir Isaac Newton. Sir Frederick Hopkins is the seventh medical man to fill the office.

It is a source of great satisfaction to the medical profession that it can claim Sir Frederick Hopkins as a member. His path has always followed the lines of pure research, yet his sympathy with, and interest in, the practice of medicine has always been prominent, and much of his work has had a direct medical bearing. On the occasion of the award of the Nobel Prize, we made mention of some of the most outstanding of his contributions to science, and perhaps there is no need to recapitulate on this occasion. Suffice it to say that he is still a most active worker. As a teacher, his name stands among the first of the Cambridge school. His "Part II" lectures—those dealing with the more advanced, as opposed to the elementary, aspects of his subject—have a unique quality of freshness and inspiration. He has the power, to a remarkable degree, of making his hearers feel that there is always more to be done, and, above all, that it is well worth the doing. Medicine need have no doubt that the Presidentship, lately held by such a distinguished physicist as Sir Ernest Rutherford, will be worthily filled by its present occupier.

For those interested in any aspect of biology, Sir Frederick Hopkins's election is an important event; but one cannot avoid noticing the extreme apathy shown by the public at large towards scientific affairs. To the award of the Nobel Prize last year even newspapers which would scorn the epithet "popular" devoted but a few scanty and rather inaccurate paragraphs. In Germany (and it happened that none of the recipients were of German nationality) several important newspapers gave the event a prominence that here would be vouchsafed only to an actress or a jockey. Even in France, some considerable space was devoted to the matter, while, naturally, in Sweden, the papers for a few days contained little else. As a matter of fact, English science has, in the past, got along very well without popular support. The time has come, however, when it has assumed tremendous national importance, and it is surely right that the public should take a little interest in its progress, and in the honours bestowed on those to whom it owes its advance.

THE METHYLATED SPIRITS REGULATIONS, 1930.

THE Commissioners of Customs and Excise have recently made new Methylated Spirits Regulations, which will come into force on January 1st next. The general principle on which the Regulations are based would appear to be to permit the use of ordinary spirit free of all duty for any scientific or trade purpose whatever, provided that the revenue is adequately safeguarded against the use of duty-free spirit as a beverage or in the manufacture of perfumes. As a study in intricacy the Regulations are worthy of investigation, but for ordinary purposes this is unnecessary, as the Commissioners have thoughtfully issued three explanatory notices drawn up in terms of comparative simplicity.

In future, methylated spirits will be available in four forms: (1) mineralized methylated spirits, coloured blue; (2) industrial methylated spirits, colourless; (3) industrial methylated spirits (pyridinized), also colourless; and (4) power methylated spirits, coloured red. Of these only the second—industrial methylated spirits—is of special interest to medical men; this will consist of 95 parts of ethyl alcohol denatured with 5 parts of wood naphtha, and may be obtained in various strengths, including a strength corresponding to that of absolute alcohol. It may be obtained by any medical practitioner, dentist, veterinary surgeon, hospital, or nursing home, in quantities not exceeding half a gallon at one time, from any wholesale chemist or dispensing chemist who is authorized to sell it, merely on a written order signed by a medical practitioner, dentist, or veterinary surgeon. Hospitals and nursing homes should arrange for a doctor, to whom they are known, to sign orders for them. This provision will satisfactorily meet all the ordinary requirements of the medical profession, but larger amounts may be obtained, where desired, by making application to the nearest officer of Customs and Excise for a formal authorization to receive industrial methylated spirits, which will enable the holder to buy unlimited amounts on requisition on an official form. Industrial spirits received in either of these ways may be used in making up articles to be dispensed for medical, surgical, dental, or veterinary purposes, or may be used or dispensed without admixture or diluted with water for any medical, surgical, dental, veterinary, or scientific purpose. The only material restrictive conditions are that bottles dispensed to a patient containing industrial spirits or articles made from them must be labelled "for external use only," or "not to be taken," or words to the same effect, and that no greater quantity than one pint of industrial spirits alone or as an ingredient may be dispensed to any person at one time.

All the requirements of the medical profession are thus met with a minimum of official safeguards, and for this thanks are due to the Commissioners of Customs and Excise, who have readily accommodated themselves to the points raised by representatives of the British Medical Association at conferences of interested bodies.

THE TERCENTENARY OF QUININE.

In 1630 one Canizares, a Spanish magistrate in Ecuador, discovered the efficacy in fevers of the bark of what was known as the "fever tree," actually trees of the quinine-yielding species indigenous to South America. He recommended the bark to the Countess of Chinchon, wife of the Viceroy of Peru. This lady was cured at Lima of a fever by the administration of the bark, and more than a century later Linnaeus named the genus "cinchona" in memory of the countess. (He was misinformed as to the spelling of her name and omitted the first "h.") When the countess returned to Spain in 1640 she brought with her a supply of the bark, and the valuable properties of the "countess's powder," as it was called, became known in Europe. Quantities of the bark were also sent from Peru to Spain by the Jesuit fathers, and, when distributed by their European brethren, it was known as the "Jesuit's powder." In England Charles II was cured of a fever by the application of the bark, and knighted Robert Talbor, author of *Talbor's wonderful Secret for cureing Agues and Feavers*, who brought it to his notice. A more scientific knowledge on the subject of these rubiaceous trees and their distribution was forthcoming in the latter half of the eighteenth and the first half of the nineteenth centuries, when various French and Spanish expeditions visited the forests of the Andes. In the middle of the nineteenth century efforts at transplantation were made, and eventually cinchona was successfully introduced into India, where now between 3,000 and 4,000 acres are under cinchona, yielding about 40,000 lb. of quinine every year. Of the many species in the genus only three are worthy of consideration from the medical point of view, and of the twenty or more alkaloids obtainable from the barks, only five have much medical interest. The discovery of quinine and its application is altogether a romantic story, about which a book might well be written, telling of the pioneer explorations of the venturesome Spaniards in South America, and, not less thrilling, the research expeditions of later scientific investigators. The Wellcome Historical Medical Museum in Wigmore Street, London, is celebrating the tercentenary in a very interesting manner. An extensive collection of exhibits has been arranged to illustrate the history of this most valuable discovery in materia medica. The exhibition is designed to bring out the historical development from the time of the first introduction of the bark until the present day, when experimental research on its active principles is still continuing. There are also to be held four receptions at the Museum on the afternoons and evenings of December 8th and 10th. On the first afternoon, under the chairmanship of His Eminence Cardinal Bourne, an address is to be delivered by the Spanish Ambassador, and it is hoped that the French Ambassador and the Peruvian Minister will also speak. In the evening, under the presidency of the Netherlands Minister, an address will be given by Archbishop Goodier, and other speakers will be the American Ambassador and Professor Van der Wielen of Amsterdam University. On December 10th Dr. H. S. Wellcome himself will preside at the afternoon gathering, when the principal address will be delivered by Sir David Prain, who has had much to do with the development of the Indian cinchona plantations. The final reception, on the evening of the 10th, will be of a medical character. Sir John Rose Bradford, President of the Royal College of Physicians, is to preside, and the principal address will be delivered by Sir Humphry Rolleston, Regius Professor of Physic in the University of Cambridge, other speakers being Mr. A. R. Melhuish, President of the Pharmaceutical Society, and Colonel C. T. Samman, Master of the Society of Apothecaries.

CINCHONA FEBRIFUGE.

The cost of drugs is a matter of no small moment in the successful treatment of diseases endemic among poverty-stricken tropical populations, and this is particularly true of the treatment of malaria. Italian experience has shown that a low standard of living may in itself be a prominent factor in increasing susceptibility to malaria, hence it is idle to recommend the use of an expensive drug to a population whose poverty favours the incidence of the disease. For this reason cinchona febrifuge is an important remedy in tropical countries. Salts of quinine have many advantages over cinchona febrifuge for the treatment of white populations, but unfortunately they are expensive; for example, a recent wholesale price quoted for quinine sulphate is 2s. 3d. an ounce, and at this rate the alkaloid costs about twice its weight of silver. The wholesale cost of the drug used in the treatment of a case of malaria of average severity is between 6d. and 1s. Not a large sum, perhaps; but in this country, if quinine were needed in large quantities to combat malaria, the drug allowance under the National Health Insurance scheme would have to be increased. In tropical countries the cost of quinine is an important factor limiting its use. Cinchona febrifuge has two advantages; it costs less to prepare than quinine salts, and all the alkaloids in cinchona bark are utilized. The latter is a point of much consequence for India because the *C. succiruba* is a hardy tree that gives a heavy yield of bark with mixed alkaloids, and is therefore suitable for providing a large yield of cinchona febrifuge at a low price, whereas the varieties of *C. ledgeriana*, which have been evolved by selective breeding to produce a high quinine content, are more delicate trees. There are really two problems involved: first, the relative value of quinine and the other alkaloids of cinchona bark in the treatment of malaria, and secondly, whether it is possible to prepare a cinchona febrifuge of uniform composition. The latter problem is very important, for the first requirement of successful therapy is the possession of a drug of uniform potency. Papers recently published from the Wellcome Research Laboratories give information on both these points. The action of the cinchona alkaloids has been tested systematically on bird malaria.[1] The authors found that hydroquinine was the most active, followed by quinidine, quinine, cinchonidine, and cinchonine in descending order, but the differences between the last four were slight. Previous clinical investigations have borne out the chief conclusion—namely, that there is only a small difference in the therapeutic activity of the four last-mentioned alkaloids. This conclusion is of great practical interest, because it suggests that the separation of quinine from the other three alkaloids is wasteful from the economic standpoint. Analyses of cinchona febrifuge[2] show, however, that at present the composition of this preparation varies in an extraordinary manner. The authors have detected a number of errors in previous methods used to isolate the individual alkaloids, but their corrections only accentuate the variations in the composition of the total alkaloids present in different samples. The proportion of quinine in the three specimens was 15.6, 1.8, and 5.5 per cent. respectively, whilst the crystallizable alkaloids varied from 25 to 52 per cent. These figures confirm the conclusions of previous workers who have shown that there is no uniformity in the composition of cinchona febrifuge. Apparently cinchona febrifuge represents the residue left behind after the alkaloids of chief commercial value have been removed, and the proportion removed depends on a number of variable factors, chief among which is the price of quinine. The preparation of a cheaper but efficient

[1] Goodson, Henry, and Macfie: *Biochem. Journ.*, 1930, xxiv, 874.
[2] Goodson and Henry: *Quart. Journ. of Pharmacy and Pharm.*, 1930, iii, 238.

substitute for pure quinine is certainly a matter of importance to the British Empire; cinchona febrifuge is at present the only likely substitute. It is used already on a large scale in India, and it would appear practicable to employ it on a much larger scale both in India and in some of our tropical colonies. The preparation of a cinchona febrifuge of rigidly uniform composition would be difficult, if not impossible, owing to the variations in the alkaloidal content of cinchona bark. There is, however, no adequate reason for the extreme variations that occur at present. If the use of cinchona febrifuge is to be extended widely, it is obvious that some means of standardization must be devised which will ensure that the preparation has a much more uniform composition.

A MEDICAL SUNDAY SCHOOL IN PARIS.

Leçons du Dimanche was reviewed in our columns on May 4th, 1929 (p. 822), on its first appearance last year, and the second (1930) series of lectures[1] is very welcome. It is particularly interesting to us because it serves as a mirror of current medical interests in France, and we can see the subjects which so attract the general practitioner of Paris that he is willing to spend eleven of his Sunday mornings at the Hôtel-Dieu. The lectures cover a wide field of physiology, pathology, medicine, surgery, and therapeutics. It is impossible to review each lecture, but a few of them may be mentioned here. Carnot, the editor of the series, begins them with a most interesting account of the substances, mineral and humoral, which induce cell proliferation in the animal body. One set of experiments shows how the injection of serums from animals repeatedly bled aids in blood regeneration in human cases of anaemia, and may have important therapeutic bearings, which, although tested in France, have attracted little attention in England. Binet gives a summary of his now well-known work on the functions of the spleen, which is important in relation to Barcroft's work in Cambridge. Villaret's lecture on the use of acetyl choline in the treatment of Raynaud's disease, obliterative arteritis, and kindred conditions, is perhaps the most interesting of all. Villaret, though he makes no claims to earlier work on the physiological properties of this substance, states that he is the originator of its use in practical clinical medicine. He not only gives a full account of the drug and its action, but goes most carefully into the practical difficulties of its administration, and particularly of its dosage and frequency of repetition under different circumstances. We look forward to the annual appearance of these most interesting "lessons."

THE LEEDS MATERNITY HOSPITAL.

SOME account was given in the *British Medical Journal* of August, 1921 (p. 249), of the development of the teaching of midwifery in connexion with the Leeds School of Medicine, where it was pointed out that many years ago the students had to depend on Poor Law officers and on private practitioners for their midwifery experience. Reference was also made to the fact that in 1885 the Leeds General Infirmary—ever anxious to co-operate with the School of Medicine—started an extern maternity department, which was later supplemented by a small intern department at the Hospital for Women and Children. At the time of its institution the Leeds Maternity Hospital had only sixteen beds, and was little more than a nursing home. The accommodation soon became too limited, and the trustees were fortunate in enlisting the sympathy of Mr. J. E. Pepper, who handed over to them his house in Hyde Terrace—the nucleus of the present hospital. In 1910, by reconstruction and by building a new wing, accommodation was secured for thirty-three patients and for a nursing staff of twenty-seven. During the first year after the reconstruction of the hospital, 398 confinements took place within its walls. Other activities included the foundation and development of various centres concerned with the care of women during their confinements at their own homes. This work was done with the complete approval of the Infirmary authorities, and on the understanding that the whole of their extern maternity department would in time be taken over by the new hospital. In 1917 the hospital was recognized by the Local Government Board and by the Leeds City Council, and received substantial grants from both of these bodies. A further enlargement was carried out in 1918, and some adjoining property was secured in order to provide a home for the nursing staff, the accommodation for patients having increased to seventy-five beds. In recent years there has been complete co-operation between the Maternity Hospital, the University of Leeds, and the General Infirmary at which the students do most of their clinical work and avail themselves of its facilities for obtaining experience in midwifery. As a result, the entire teaching of obstetrics, apart from the lectures at the School of Medicine, has been confidently entrusted to the Maternity Hospital. This co-operation and identification of interests is illustrated by the fact that the tutor in obstetrics and gynaecology, who is appointed by the University to supervise the instruction of the students, does most of his work within the hospital. In 1923, however, it had to be recognized that, in spite of all that had been done in Leeds and elsewhere in the country, the maternal death rate was as high as it had been a quarter of a century before, and the board of management boldly decided to extend the hospital on such a scale as to include: (*a*) a new ante-natal department; (*b*) a new labour ward; (*c*) a new operating theatre and anaesthetic room; (*d*) increased accommodation for lying-in patients to a total number of 108 beds; (*e*) new kitchens, dining rooms, etc.; (*f*) improved laundry accommodation, and extended accommodation for the staff. It also considered that there was a great need for an isolation block, and that facilities should be secured for research. The sum estimated to carry out all these requirements, involving a considerable extension of the hospital, was about £64,000, of which £56,000 was received by October 31st. The success of the appeal owed much to the ladies of Leeds, especially to those on the board of management, who showed a remarkable vigour and versatility in the collection of funds. The extended hospital was formally opened by Mrs. Stanley Baldwin on November 25th, and is now in full occupation. The internal arrangements of the building are excellent in every way, and Leeds is to be congratulated in possessing a first-class maternity hospital, well equipped as a charity and as a teaching institution for medical students, nurses, and for those who desire, by post-graduate study, to extend their knowledge of obstetrics. As a part of their training in this subject the students of the University have to give evidence that they have devoted three months to work exclusively in connexion with the Maternity Hospital. They live in an adjoining University hostel, and can be called upon at any hour, so that they have every opportunity of assisting at all kinds of normal and abnormal labours, and of taking part in the ante-natal work, which is increasing in importance. To meet requests for post-graduate instruction, and to provide qualified practitioners with opportunities for gaining additional experience, arrangements have been made for the accommodation at the hostel of a limited number of post-graduate students and of those desiring to specialize in obstetrics.

[1] *Leçons du Dimanche.* Deuxième Série. Clinique Médicale de l'Hôtel-Dieu. Professor Paul Carnot. Paris: J.-B. Baillière et Fils. 1930.

ORIGIN OF THE AUTOMATIC MICROTOME.

As various erroneous accounts of the invention of this instrument, which was such an important technical advance in histological methods, have gained publicity, Sir Richard Threlfall[1] has now recorded the history as it occurred at Cambridge since 1882. In that year W. H. Caldwell, when working at embryology by the method of embedding in paraffin and cutting sections, as was the then best available method, noticed that if the paraffin was of the right consistency in relation to the temperature, the section adhered to the sharp edge of the razor, and, further, that a second section cut without moving the first welded itself to the first and pushed it away, and similarly with a third and others, so that the new familiar ribbon was formed. Caldwell communicated this to Threlfall, and they agreed that a sectional cutting machine might thus be elaborated. Threlfall, who generously ascribes the inspiration mainly to Caldwell, then worked out the mechanical details of the machine, which was completed in 1883 and worked admirably, the original model being used, though with some modification, up to at least 1898 in the laboratory of comparative anatomy at Cambridge. The late Sir Horace Darwin of the Cambridge Scientific Instrument Company subsequently brought out the rocking microtome, which was a simpler machine than the original model. An account of the method for fixing the section and dissolving the paraffin is given, and Sir Richard Threlfall describes a remarkable instance of what may politely be called plagiarism. He communicated to a demonstrator in comparative anatomy at Strasbourg, whose name he has charitably "forgotten," the details of "the construction of the microtome and the method of section mounting, and received rather a shock when, towards the end of my stay in Strasbourg, I found that this man had written a paper in which he published all the information I had given him under his own name, and without any reference whatever to the source from which it had been acquired. No doubt a claim will be put in some day for this invention to the credit of the person in question, or it may have been made already. At all events, several German instrument makers began to make automatic microtomes very shortly afterwards, each of them of different design."

"GINGER PARALYSIS."

An epidemic of paralysis involving thousands of cases is reported to have occurred in the United States as a result of drinking adulterated ginger wine. Some years ago the Prohibition Bureau decided that the U.S.A. *Pharmacopoeia* fluid extract of ginger was a non-potable beverage. The preparation contains some 80 per cent. of alcohol, and this decision removed all restrictions from its sale. Thenceforward the inhabitants of a large area in Ohio and Tennessee acquired the habit of using the extract as a substitute for whisky. For some years no harmful results were observed, but an epidemic of paralysis suddenly commenced in February this year; it reached its peak in March and declined in April, having attacked hundreds, if not thousands, of persons. The clinical picture is that of a lower motor neurone paralysis of the distal muscles of the limbs. Foot-drop and wrist-drop are two of the most obvious symptoms. Popular rumour incriminated the fluid extract of ginger, and this belief has been confirmed by the investigations of Smith and Elvove.[2] Apparently, the damage was done by one large consignment of adulterated ginger. Samples of this produced paralysis in rabbits and calves, but not in monkeys and dogs. The investigators believe that the toxic principle is a cresol-phosphoric acid ester. The direct and indirect complications produced by prohibition have been numerous and varied, but ginger paralysis is one of the most curious that has yet been recorded.

[1] *Biological Reviews*, Cambridge, 1930, v, 357–361.

[2] Smith and Elvove: Pharmacological and Chemical Studies of the Cause of the So-called Ginger Paralysis. Reprint No. 1396. Public Health Reports, vol. xlv, No. 30, July 25th, 1930. U.S. Treasury Department, Washington.

A BIBLIOGRAPHY OF FOOD INVESTIGATION.

The Department of Scientific and Industrial Research has performed a considerable service in issuing an *Index to the Literature of Food Investigation*,[1] of which the first and second numbers of the second volume have been published this year. It is a commonplace that modern conditions of life have imposed upon civilization many artificial conditions of food supply, not the least important of which is the extensive use of tinned and preserved foods of all descriptions. On the whole, of course, such methods are of immense economic value to mankind; but they bring with them certain potential dangers, for which it is within the province of the medical profession to watch, and against which it is its duty to guard the public. Investigation of the deleterious effects upon food of various methods of preservation naturally falls within the purview of the manufacturer himself, and of various public bodies which are set up to assist him. But the medical man must from time to time be faced either with practical problems, or with requests for information, dealing with such matters, and it will be of the greatest assistance to him to know that there exists such an index as that under consideration, by means of which he can easily and rapidly track down the information he desires.

The Medical Research Council is issuing to-day the eighth of its series of reports summarizing the results of research work in the treatment of malignant disease which has been done during the past year with radium salt entrusted by the Government to the Council. (Special Report Series, No. 150. H.M. Stationery Office. 9d. net.) This stock of radium is distributed on loan among the various centres participating in a scheme of research work under the general supervision of the Radiology Committee, appointed jointly by the British Empire Cancer Campaign and the Medical Research Council. We hope to publish an account of this latest summary of reports from research centres, for 1929, on the medical uses of radium.

Under the provisions of the Mental Treatment Act, 1930, the Board of Control will be reconstituted, as from January 1st, 1931, to consist of the chairman and four other senior Commissioners. Mr. L. G. Brock, chairman of the present Board, will be chairman of the Board as reconstituted. The King has approved the appointment of the following to be members of the Board: Mr. S. J. F. Macleod, K.C., on the recommendation of the Lord Chancellor, and Sir C. Hubert Bond, M.D., Dr. Arthur Rotherham, and Mrs. Ellen Pinsent, on the recommendation of the Minister of Health.

The *Lancet* is setting up a commission of inquiry into conditions of service in the nursing profession, with special reference to the recruitment of suitable student nurses. We are sure that the medical profession will welcome an investigation of nursing conditions and of the reasons for a decline in the number of entrants; and as our contemporary has made such inquiries in former years it seems fitting that it should do so again. The chairman of the commission is Lord Crawford and Balcarres.

[1] Department of Scientific and Industrial Research. *Index to the Literature of Food Investigation.* Vol. ii, No. 1 and No. 2. Compiled by Agnes Elisabeth Glennie, B.Sc. London: H.M. Stationery Office. 1930. 2s. net each. Copies may also be obtained from the British Library of Information, 5, East 45th Street, New York.

THE ROYAL SOCIETY.

ANNIVERSARY MEETING.

THE 268th annual meeting of the Royal Society was held on December 1st, St. Andrew's Day falling this year on a Sunday. The outgoing President, Sir ERNEST RUTHERFORD, O.M., was in the chair, and delivered the usual anniversary address, in the course of which he mentioned the fourteen Fellows who had died during the year, and stated the grounds for the award of the Society's medals. He also reviewed briefly some aspects of the history of the Society since the war, and showed how its responsibilities and work had increased during that period, referring in particular to the use made of the benefactions received from Sir Alfred Yarrow, and the late Miss Lucy Foulerton, Dr. Rudolph Messel, and Dr. Ludwig Mond. The Foulerton bequest was made specifically for promotion of research in the medical sciences; the late Professor E. H. Starling was the first Foulerton professor, Professor A. V. Hill the second, and Dr. E. D. Adrian succeeded Professor Starling. In addition to the six professorships supported from trust funds obtained since the war, the Society now offers for the encouragement of young workers eight studentships and fellowships. The funds held in trust by the Society for furtherance of research in various branches of science now amount to more than £600,000.

The newly elected President, Sir FREDERICK G. HOPKINS, D.Sc., F.R.C.P., Professor of Biochemistry in the University of Cambridge, took the chair at the anniversary dinner held in Lincoln's Inn Hall on the evening of the same day, with the Prince of Wales as the guest of honour.

Dawson Williams Bequest.

The report of the Council for 1930 recorded that Sir Dawson Williams, for many years Editor of the *British Medical Journal*, had left his residuary personal estate, subject to two life interests, to the Society for its general purposes. These life interests having now ceased, the Society would benefit to the extent of approximately £8,000.

Research Appointments.

Among the research professorships and appointments made during the year have been the Smithson Fellowship, awarded to Dr. P. D. F. Murray, for researches in experimental embryology; the Foulerton Studentship to Dr. A. S. Parkes, for research on the physiology of reproduction; a Moseley Studentship to Mr. G. S. Adair, for research on the proteins of blood; the Lawrence Studentship to Lieut.-Colonel E. C. G. Maddock, for research on tuberculosis; and the Tyndall Mining Studentship to Mr. A. G. R. Whitehouse, for research on the loss of salts from the body in sweating, and the passage of water through the skin with and without sweating.

Research into Tropical Diseases.

The investigation on the bacterial complications of filariasis and on the nephritis believed to be endemic in British Guiana having been brought to a conclusion, the Tropical Diseases Committee, with the aid of the Anonymous Bequest Fund, has instituted a research into kala-azar in Mediterranean countries. With the consent of the Hebrew University of Jerusalem, Dr. Saul Adler has been placed in charge of the investigation, which will be spread over two periods of six months each. The Italian Government has afforded facilities for certain stages of the work to be carried out at Catania, and from communications already received from Dr. Adler, the investigation would appear to be making satisfactory progress.

Cost of Publications.

As a result of careful examination of the costs of printing the Society's publications, the Council has decided to raise the published price by 50 per cent. This increase will meet only part of the rise in costs since 1914, but it is anticipated that it will reduce to small dimensions the demands on the Messel and Mond Funds to meet the annual deficit on publications. It is hoped that a further economy may be effected by a careful revision of the "exchange" list.

IMPERIAL CANCER RESEARCH FUND.

REPORT FOR 1929-30.

IN the twenty-eighth annual report of the Imperial Cancer Research Fund, just published, the work of the year 1929-30 is reviewed.

The report deals with some of the most controversial problems of the nature and causation of cancer. Many of these have only been clearly formulated by a study of the experimental and naturally occurring tumours of animals. While it is possible to deal with certain of the questions of the origin of cancer by a study of the disease in man, the long duration of life in the human species limits the possibilities of successful attack and makes new extended observations inordinately expensive. Hence in every country where cancer is studied systematically, organizations and institutes on the same model as that of the Imperial Fund have been set up to acquire new knowledge by study on short-lived animals in order to economize time and money. When it is further realized that the whole group of tumours which can be transmitted specifically without the intervention of living cells can only be studied at the present in the domestic fowl, it is clear that the restriction of the main endeavours of the Imperial Cancer Research Fund to the experimental study of cancer under laboratory conditions is imperative both on scientific and on financial grounds. One of the most discouraging features of the world-wide activity in cancer research during the last ten years has been the publication of new methods of treatment which have not fulfilled the expectations of their authors and of sufferers from the disease. Those responsible for the work of the Fund believe that a more extended and critical use of the methods and material made available by experimental cancer research, before advancing to the crucial, time-consuming experiments on man, would not only be the means of avoiding much unnecessary human suffering, but would accelerate progress, which, in a subject of such difficulty and subtlety, is of necessity painfully slow. It has been the practice of the Fund to welcome collaboration with workers in other laboratories. The lists of workers and institutes to whom have been supplied material and from whom assistance has been given indicate the extent to which this policy is carried out by the scientific staff.

DIRECTOR'S REPORT.

The director, Dr. J. A. Murray, F.R.S., in reviewing the work of the year, states that the staff has been chiefly occupied in the preparation of the ninth scientific report shortly to be published, which includes sixteen papers and communications by the research workers engaged. The other papers issued from the laboratory during the past year and not included in the ninth scientific report are to be dealt with on a future occasion.

Dealing first with fowl tumours, Dr. Murray says that, in the Rous I sarcoma, the filterable endothelioma (M.H.2), and the filterable fibrosarcoma (M.H.1) we now possess three growths of the fowl microscopically distinct. Biologically they form a graduated series, Rous I being the most malignant and M.H.1 the least. It is believed that the detailed comparative study of the process of tumour induction in these three tumour strains will help to elucidate the mechanism by which their specific non-cellular transmission is accomplished.

Dr. Cramer has attempted a solution of the problem of the non-cellular transmission of mammalian malignant neoplasms, approaching the problem from a new angle. Starting from the well-known fact that repeated freezing and thawing leads to very efficient disintegration of protoplasmic structure and cell death in normal tissues, he has studied its effect on transplantable tumour cells of the mouse and rat. The result has been that the majority of the sarcomata and all the carcinomata studied lose their transplantability after alternate freezing and thawing four times; but two mouse sarcomata and one rat sarcoma are, on occasion, still able to give tumours. The positive results are not uniformly distributed over the whole series of experiments as isolated exceptions. Especially in the case of one mouse sarcoma high percentages

of positive results occur in individual experiments, the preceding and succeeding series being completely negative. Dr. Murray indicates the need for regarding the results with reserve, as there are many difficulties in the possible inferences discussed, and although both tissue culture and study of the respiration of the thawed emulsion at body temperature gave negative results, survival of small numbers of especially robust cells cannot be excluded. Drs. Cramer and Foulds therefore carried out a series of parallel experiments with the Rous I sarcoma of the fowl. It was found that, whereas Rous I in the filterable phase gave frozen and thawed emulsions of high potency, the same procedure robbed some of the non-filterable tumours of their perfect transmissibility by means of grafts not previously damaged in this way. The result illustrates the successive dilemmas which are encountered when the attempt is made to interpret the mammalian tumour findings either by an *ad hoc* assumption of exceptional resistance of some tumour cells or by postulating a non-cellular tumour-producing agent in them.

Experimental Carcinogenesis.

Dr. Cramer has continued his work on the subject of experimental carcinogenesis. His attempts to duplicate Deelman's results had not been successful, and the experiments were extended to clear up the discrepancy. Partial excision of the tarred area as soon as papillomatous nodules appeared only exceptionally led to the development of new proliferative centres either in the scars or near them. The attempt was made to induce rapid malignant transformation of apparently quiescent warty growths by subcutaneous trauma. This was done either by thermo-cautery or by lunar caustic pencil, the deep surface of the papilloma being reached by a flap incision. In a considerable number of the warts treated a change in rate of growth set in within two weeks, and active malignant growth ensued. The result is interpreted as showing the existence of a local resistance to the malignant transformation, residing in the adjacent connective tissues, which can be broken down by sufficiently severe damage.

Dr. Foulds has made a careful histological study of neoplasm in the mouse derived from the endothelium of blood vessels, and he has demonstrated that all the resultant tumours present a classical picture of haemangioma, some of them showing evidence of low-grade malignancy. It is thus clear that the action between the spread of the haemangiomata of the human being and the pre-existing normal vessels is established.

Other Researches.

Dr. Gye had noted certain anomalies in the strain of mouse carcinoma 63, maintained in his laboratory, in its reactions to the tissue immunity following injection of normal embryonic emulsions. A reinvestigation of the phenomena of concomitant immunity in this and other strains of transplantable mouse tumours was therefore undertaken by Dr. Foulds, and it was found that

"while our own strain of carcinoma 63 produced practically no concomitant immunity to reinoculation, the Gye strain did so, inhibiting successful reinoculation in 40 to 50 per cent. of the animals bearing progressively growing tumours. Having become accustomed to grow in animals with acquired resistance, the strain had become insensitive to the resistance produced by inoculation of normal emulsions. A similar change was even more strikingly exemplified in the case of mouse carcinoma 206. This strain for many years has been characterized by a rapid initial growth on transplantation followed by complete regression of the majority of the tumours, some of which may have reached a weight of two or three grams. Recently this regression has become less pronounced, and in many series the majority of the mice have presented progressively growing tumours. When their immunity reactions were tested against our laboratory strain of carcinoma 63, they were found to be highly resistant, reinoculation being completely negative. Reinoculation with carcinoma 206, however, gave the opposite result, all, or nearly all, reinoculations being successful. The change in behaviour in the strain is therefore clearly due to a loss of sensitiveness to the resistant condition which the inoculation of this tumour still sets up in normal mice. Attention is drawn to the significance of the results and the necessity for a detailed knowledge of the concomitant immunity reactions of any strain used for therapeutic experiments."

In a paper demonstrating the subepithelial plexus of the normal mouse skin, Dr. Ludford presents a careful study of the problem of the existence of a functional innervation of malignant new growths. He has also undertaken an examination of the chromosome constitution of transplantable tumour strains, and his work may show the way to a clearer understanding of the nuclear constitution of cancer cells, in which the late Professor Boveri considered that the chromosome constitution was defective.

Dr. Murray's paper on a polychrome staining method for histopathological material concludes the ninth scientific report.

Treasurer's Report.

Sir George Makins, in his report as honorary treasurer of the Fund, points out that the fixed income fell short of the ordinary expenditure by £3,645, and, were it not for Lord Atholstan's grant of £2,000 per annum and also other donations, the financial position would be a very difficult one. Unfortunately, the Fund can count on only two more instalments of Lord Atholstan's grant, and therefore the treasurer appeals to others to assist in pursuing the researches to a successful termination.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.

ANNUAL COURT OF GOVERNORS.

THE annual meeting of the Court of Governors of the London School of Hygiene and Tropical Medicine was held on November 28th. Sir HARRY GOSCHEN, chairman of the Board of Management, in presenting the sixth annual report, referred regretfully to the illness of Sir Andrew Balfour, director of the school, for whom a further prolonged period of sick leave had been necessary. The Board had appointed Professor W. W. Jameson to be dean of the school in his absence. In referring to the reception to the Colonial governors, given at the school in July last, Sir Harry Goschen said that this was preliminary to a visit to the Colonies by the director, from which visit the school had high hopes. The school and its predecessor had rendered most valuable services to the Colonial Governments in the staffing of the Colonial Medical Services with properly trained men, and the high standard of the courses of study in tropical medicine and hygiene was being maintained.

With regard to the financial situation, Sir Harry Goschen said that this was satisfactory up to a point. The Court of London University had secured to the school an Exchequer grant for a term of years at the rate of £40,000 per annum. The school, however, had to supplement this by voluntary effort, not only to meet the cost of the present programme, but of developments, especially in regard to industrial medicine and hygiene, which were already pressing for attention. It was essential that a university institution such as the school, with large and increasing responsibilities, should be able to expand and develop, and for this it must possess a large endowment, independent of any Government grants, and be free from hampering financial anxiety.

Professor W. W. JAMESON, the dean, presented a report on the working of the school during its first year of occupation of the present premises in Gower Street. The report consisted principally of contributions by the heads of the various divisions and departments, summarizing the work done. He spoke of the way in which the various divisions of the school had been equipped, the staffs completed, the students enrolled, and the methods of teaching re-designed. In the first academic year, 217 post-graduate students had been enrolled, 144 of this number attending the courses in tropical medicine and hygiene, and 51 those in public health. Rather more than one-third of the students had come from the Colonial Services. In addition, 75 non-medical persons proceeding to the Tropics, including Indian Civil Service probationers, had attended the lectures in tropical hygiene. Out of 84 competing, 50 had gained the D.T.M. and H.Eng.

The dean went on to refer to the valuable assistance afforded by the Seamen's Hospital Society, whose recent extension of the Hospital for Tropical Diseases provided a centre for the teaching of tropical medicine in association with the school of which the whole Empire might be proud. He commended to the Court the school's activities in the divisions of medical

zoology, of bacteriology, of biochemistry and chemistry, and of epidemiology and vital statistics. As regards the public health division, which he described as the general utility division of the school, a valuable liaison was being rapidly established with the public health services, not only in this country, but in all parts of the world. A beginning had been made with the teaching of industrial physiology and medical industrial psychology, in both of which branches of study considerable problems were pressing for the attention of the school. The first year's experience of working with his colleagues in the new building led the dean to remark that no one of them had a single doubt as to the contribution which this school could make, whether by teaching or by research, or even by merely providing a meeting place for students with community of interests in the great allied subjects of hygiene and tropical medicine.

NEW LAWS FOR MOTORISTS.

SUMMARY OF CHANGES.

WITH the exception of certain provisions relating particularly to commercial vehicles, Part I of the new Road Traffic Act came into operation on Monday, December 1st. The Automobile Association has prepared the following summary of the main provisions and changes in the law, which amplifies in various respects the information given by Mr. Stenson Cooke in our issue of November 15th (p. 830).

Driving Licences.

The minimum qualifying ages are: for motor cars, 17 years (no change); for motor cycles, 16 years (previously 14); for heavy motor vehicles exceeding 2½ tons in weight unladen), 21 years (previously 17). Existing licences will be valid for their unexpired period, except in the cases of motor cyclists under 16 years of age and the drivers of heavy motor vehicles under 21. Persons in these categories will be granted a new licence subject to their satisfying the authority that they were in the habit of driving a vehicle of that particular class during the six months ended December 31st, 1929.

The licence must be produced for examination on the request of any police officer, to enable him to ascertain the name and address of the holder of the licence, the date of issue, and the authority by which it was issued. If unable immediately to produce the licence, the driver must produce it in person within five days at any police station he may specify at the time of the request for production.

When the licence is granted the holder must forthwith sign it with his ordinary signature. The necessary forms can be obtained from the county or county borough council where the applicant resides.

Physical Fitness.

A declaration of physical fitness must be made at the time of application for a driving licence (see *British Medical Journal*, November 22nd, p. 882). Epilepsy, liability to sudden attacks of disabling giddiness or fainting, and inability to read a motor car number plate with six letters and figures at a distance of 25 yards in good daylight (with the aid of glasses if worn) are disabilities described as a bar to obtaining a driving licence. Any person suffering from a disability other than those stated above may, if refused a licence, claim the right to a driving test unless he is able to declare that he has driven safely for six months preceding his application, when he will be granted a licence without test (fee 10s.). A learner's licence will be obtainable at a fee of 5s. Every applicant refused a licence has a general right of appeal to the police court in the neighbourhood where he resides, and the court has power to reverse or affirm the decision of the licensing authority.

Dangerous and Careless Driving.

Dangerous driving penalties are increased to a maximum fine of £50 or up to four months' imprisonment for the first offence, and a maximum fine of £100 or up to four months' imprisonment, or to both such fine and imprisonment, for the second or subsequent offence. A person cannot be convicted of dangerous driving unless (*a*) he was warned at the time the offence was committed, or (*b*) the summons was served within fourteen days, or (*c*) either he or the owner received within fourteen days a notice of intended prosecution giving the essential details. Persons charged with this offence may elect to be tried by jury.

Driving without due care and attention, or without reasonable consideration for other road users, is a new offence punishable by a maximum fine of £10 for the first offence, and a maximum fine of £50 or imprisonment up to three months for the second or subsequent offence.

Driving under Influence of Drink or Drugs.

Driving, or attempting to drive, or being in charge of a motor vehicle, on a road or other public place, when under the influence of drink or drugs, to such an extent as to be incapable of having proper control, is punishable, for the first offence by a maximum fine of £50 or imprisonment up to four months, and for a second or subsequent conviction, a maximum fine of £100, or up to four months' imprisonment, or to both such fine and imprisonment. Persons charged with this offence may elect to be tried by a jury.

Accidents.

If an accident occurs causing damage or injury to any person, vehicle, or animal, the car must be stopped immediately and the driver must give his name and address, also that of owner, and car number, if requested by any person having reasonable grounds for requiring the information. If an accident occurs, and the driver for any reason does not give his name and address, he must report the facts to a police station, or to a police constable, as soon as reasonably practicable, and in any event, within twenty-four hours.

Driving off Highways.

Driving without lawful authority on to common land, moorland, or any land not forming part of a road, or any bridleway, or foot way, except for a distance of 15 yards, for the purpose of parking, is prohibited.

Miscellaneous Provisions.

Other paragraphs of the A.A.'s summary refer to pillion riding, and to the prohibition of unauthorized use of cars ("joy riding"), tampering with motor vehicles, and racing and speed trials.

The operation of the remaining provisions of the Act, including compulsory third-party insurance and the abolition of the twenty-mile speed limit, is deferred until the New Year. Meantime, following the recent issue of its preliminary booklet, the legal department of the Automobile Association is preparing a comprehensive book dealing in simple language with the whole Act and Regulations.

MEDICAL CONGRESSES, 1930-31.

THE following congresses and conferences on medical and allied subjects have been announced for 1931 and the remainder of this year. Particulars are given below in the following order: date, name of organizing body, place of meeting, name of person to whom inquiries should be addressed. More detailed information about these meetings is given from time to time, as it becomes available, in the news columns of the *British Medical Journal*.

December 11–13.—Central Association for Mental Welfare. London. Secretary of Association, 24, Buckingham Palace Road, S.W.1.

December 27–30.—Pan-Russian Congress of Microbiology. Moscow. Office of Congress, Povrouka 44, Moscow.

April 9–10.—German Psychiatric Society, Breslau.

April 12–16.—Congress of Psychology. Hamburg.

April.—German Balneological Society. Bad Ems.

May.—Royal Institute of Public Health. Frankfurt. Secretary of Institute, 37, Russell Square, W.C.1.

June 8–13.—International Hospital Congress. Vienna. Professor Tandler, 9, Rathausstrasse, Vienna.

June.—International League against Trachoma. Budapest.

July 4–11.—Royal Sanitary Institute. Glasgow. Secretary of Institute, 90, Buckingham Palace Road, S.W.1.

July 21–25.—British Medical Association. Eastbourne. Financial Secretary of British Medical Association, Tavistock Square, W.C.1.

July 27–31.—International Congress of Radiology. Paris. Secretary of Congress, 34, Boulevard de Vaugirard, Paris, XV.

August 3–8.—International Dental Congress. Paris. Mr. A. E. Rowlett, 165, London Road, Leicester.

August.—International Congress for Industrial Medicine. General Mr. G. L. Perry, Industrial Welfare Society, 51, Palace Street, S.W.1.

August 31–September 4.—International Congress of Neurology. Bern.

September 21.—Faraday Centenary. London. Secretary of Royal Institution, 21, Albemarle Street, W.1.

September 23–30.—British Association Centenary Meeting. London. Secretary of Association, Burlington House, Piccadilly, W.1.

October 14–18.—International Congress of Comparative Pathology. Paris. Dr. Grollet, 7, rue Gustave Nadaud, Paris, 26.

1931.—International Congress against Alcoholism. Warsaw.

1931.—International Congress of Military Medicine. Budapest.

Scotland.

Edinburgh Royal Infirmary.

THE twelfth annual meeting of the League of Subscribers to the Royal Infirmary of Edinburgh was held on November 25th under the presidency of Mr. James Campbell, who remarked that, despite the industrial depression, the total contributions for twelve years had amounted to over £220,000, which showed the power of the worker's penny. Mr. Russell Paton, the organizing secretary, stated that in the past year £21,662 had been received from employees engaged in public works, business establishments, staffs of banks, insurance offices, schools, etc., and that these subscribers included more than 120,000 wage-earners. Several firms in the city and country districts subscribed one pound for every pound raised by their employees. Family circle members of the league were also specially desirable. Lord Murray, in presenting a statement of the year's work in the Royal Infirmary, said that during the past year over 20,000 patients had been treated in the wards—nearly 700 more than the highest previous number. The managers regretted that the only possible way to reduce the waiting list was to extend the building itself; it was therefore all the more necessary for everyone concerned to work for this extension. Lady Findlay referred to the valuable assistance given to the Infirmary by the League of Subscribers, whose record indicated the genuine affection of the public towards an institution which it had come to regard as its own. The help of the league was needed to raise £500,000. At present the nurses' accommodation was strained to its utmost; in the extension scheme it was necessary to bring the nurses together in one building and to give them the advantages of a community life. A building for the maternity hospital was also required, since its work was being carried out with great difficulty.

Glasgow Maternity and Women's Hospital.

The fourth annual medical report of the Glasgow Maternity and Women's Hospital, prepared by Dr. J. N. Cruickshank, registrar to the hospital, and following the plan adopted in previous years, contains tabulated records of the work done during the period under review, arranged in accordance with the standard scheme suggested by the committee appointed by the Royal Society of Medicine for the unification of the clinical reports of maternity hospitals. Of the 114 beds in the hospital, twenty-five were reserved entirely for the ante-natal department; but as a number of extra beds were always in use the average number of patients in residence per day was no fewer than 143. By arrangement with the Glasgow Parish Council a number of beds were made available in Stobhill Hospital, thus enabling the Maternity Hospital to continue its policy of not refusing treatment to any woman in labour. The ante-natal department works in co-operation with the ante-natal dispensary, from which many cases are admitted either to the ante-natal wards or to the obstetrical department. Combined with this ante-natal dispensary are a post-natal dispensary and a child welfare centre, at all of which the total attendances during the year numbered 17,857. A certain number of emergency cases are admitted to the wards from "the district"; others are sent to the hospital by medical practitioners and midwives, and even by other institutions. Finally, included among the admissions is one group of patients who have come to the hospital after the onset of labour, without having been seen by a doctor or a midwife. In these circumstances, states Dr. Cruickshank, the simple division into "booked" cases and "emergencies" cannot easily be applied to this hospital, and it has been found necessary for the purposes of record to place cases into three categories—those that have been under ante-natal supervision, emergencies, and those cases, other than emergencies, that have not had ante-natal supervision. Of the 3,841 patients admitted to the hospital, 1,346 came within the first category, 1,671 within the second, and 823 within the third. Besides these the hospital treated 3,820 patients in their own homes, and 821 in the beds specially reserved at the Stobhill Hospital.

Past and Present Aspects of Therapeutics.

The opening meeting for the session of the Pharmaceutical Society of Great Britain was held in the Society's Hall, Edinburgh, on November 28th, when Mr. Charles Simpson (Aberdeen) occupied the chair. In the course of his inaugural address Professor Ralph Stockman (Glasgow University) said that treatment involved two important considerations—namely, the principles on which treatment was based and the methods by which they were applied. Referring to certain aspects of present-day therapeutics, he said that account must be taken of the influence exercised by manufacturing drug firms upon current practice by persistent and specious advertising of their own special products. The elaborate quasi-scientific and clinical dissertations which were freely showered upon the medical profession were not guarantees of a profound knowledge of pharmacology or of therapeutics. It had to be admitted, however, that the medical profession owed the introduction of some good remedies to manufacturing chemists, who also deserved gratitude for furnishing reliable preparations of proved and attested remedies, but they should not adopt the role of teachers of pharmacology and therapeutics. Treatment by serums and vaccines, and the development of endocrinology, had a very dubious record from the point of view of therapeutic activity. A weakness in the medical curriculum was that the student received a large amount of mere description, and had to do an equal amount of mere memorizing; there was a minimum of such mental discipline as was provided by mathematics or physics, which tended to develop reasoning power. This training was specially required in therapeutics, which demanded an early cultivation of clear ideas of the principles and methods on which individual cases were treated. Treatment should be given as much prominence as diagnosis in clinical teaching, and some actual experience in treatment during a student's course was desirable. If a medical court, with medical judges, solicitors, advocates, and juries, was instituted to pronounce on the worth of new drugs, treatments, and operations, it might be of incalculable benefit to the medical profession and a protection to the public.

Ultra-violet Rays in Medicine.

A health lecture upon the influence of sunlight on fresh air and nutrition was delivered at Edinburgh on November 26th by Dr. John B. King, who said that reference to the subject of radiations had been greatly simplified in recent years by the increasing familiarity of the public with this idea in the form of wireless waves, and with the extended use of x rays in medicine. In spite of the keen interest in the whole question of treatment by light, ultra-violet rays, x rays, and radium, however, it was not very widely realized that all these forms of radiation were essentially of the same nature, differing only in their wave-length. One of the best-known effects of the ultra-violet rays was the formation of vitamin D by their action on the skin. That rickets was due to a deficiency of sunlight began to be recognized about the beginning of the present century. The artificially produced ultra-violet rays were not used in medicine until 1893, when Finsen started his clinic for the treatment of lupus at Copenhagen. Ten years later Rollier established a centre at Leysin for the treatment of bone and lung tuberculosis; since that time both these clinics had done excellent work, so that sunlight clinics had been established in every country in the civilized world. About 1925 a surprising boom in artificial ultra-violet ray treatment started in Great Britain, which at first was taken up by untrained workers, with inevitable results. A reaction had set in, and ultra-violet ray treatment had come to be regarded as the fad of unbalanced enthusiasts. Nevertheless, this form of treatment had a very definite place in therapeutics, as would be recognized in time. Great interest had recently been aroused in the irradiation of food; irradiated milk had proved a potent agent in the curing of rickets.

Ireland.

Vital Statistics for Northern Ireland.

DURING the quarter ended September 30th, 6,513 births were registered in the twenty-seven superintendent registrars' districts in Northern Ireland. This number represents an annual birth rate of 20.9 per 1,000 of the estimated population, the equivalent figure for England and Wales being 16.6, and for Scotland 18.7. The rate in Northern Ireland is 0.2 above the rate for the corresponding quarter of 1929, and 1.8 below the average rate for the third quarters of the ten years 1920 to 1929. Deaths registered during the quarter numbered 3,486, or an annual rate of 11.2 per 1,000, being 0.2 above the rate for the corresponding quarter of 1929, and 1.2 below the average rate for the third quarters of the ten years 1920 to 1929. The urban mortality from the principal epidemic diseases recorded during the quarter was equivalent to an annual rate of 0.5 per 1,000 of the population, the death rate from these diseases being 0.2 for the remainder of Northern Ireland. Deaths from cancer numbered 330, or an annual rate of 1.06 per 1,000, compared with an average rate of 1.09 for the third quarters of the previous five years. The number of deaths of infants under 1 year of age was 34.9, or 10 per cent. of the total number of deaths registered. This quarterly return includes the usual notes on the weather during the three months, supplied by the director of the meteorological office in Belfast.

Inquiry in County Galway.

The failure of the County Galway Board of Health to appoint an assistant county medical officer of health was the subject of a recent inquiry, held in Galway by Mr. A. Delaney, inspector of the Local Government Department. The secretary said that a resolution was passed by the board stating that it only desired to save the county from being saddled with expenses which it could ill afford. The appointment of a medical officer of health cost the county £1,400, of which £400 was recovered from national funds. It was now asked to meet an additional expenditure amounting to £1,300, and it was satisfied that if the plan were carried through it was only the beginning of a scheme which would land the county in bankruptcy. It had already established a first-class hospital service. In England the Public Health Act of 1929 had granted local autonomy to the county councils in all health matters within their areas. The secretary read a considered opinion of the medical staff of the Galway Central Hospital, that if the scheme were put into operation in the 367 schools in County Galway it would cost over £10,000 per annum. An alternative scheme suggested was that the county medical officer of health should attend the various tuberculosis dispensaries in the county as part of his work, and that the medical department of the Central Hospital should be responsible for Galway Sanatorium, or that the dispensary doctors of the areas should attend at the dispensary for tuberculous patients. With regard to child welfare, the poor children should be treated by the dispensary officers, and the children of the rich could have the treatment provided by existing medical services. They would advise the board to terminate the appointment of the two nurses whom the Ministry had ordered to be appointed in connexion with the county medical officer's appointment.

Dr. Bartley O'Beirne, county medical officer of health, said that it was absolutely necessary that an assistant should be appointed. Before his appointment he had been county tuberculosis officer, and looked after the sanatorium in Galway, a dispensary there, and six dispensaries throughout the county. If the assistant were appointed, this would be part of his duties, but as no one had been appointed he was attending to the sanatorium and to the Galway Dispensary, while the others were being neglected. The local dispensary doctors looked after the tuberculous patients as well as they could in the dispensary districts. Replying to Mr. A. Lynn, who, with Mr. Conor Maguire, appeared for the Board of Health and County Council, he said he had prepared his scheme for examination of school children, and it would involve an enormous amount of work, which it would be impossible for him to do along with his other duties.

Mr. Lynn contended that they were not legally bound to appoint an assistant medical officer of health; in the case of the nurses, the department could have referred the matter to the Appointments Commissioners, who would have appointed them, but for some obscure reason a different attitude had been preferred. The board could show that it was doing the work with an efficiency not excelled by any board of health. It was grotesque to suggest that two nurses could look after an area so large as County Galway, or that even the county medical officer of health and an assistant could do it efficiently. The alternative scheme put forward by the Galway Hospital doctors was the only feasible one, and would enlist the services of the existing dispensary doctors, who would work as a team under the county medical officer. In this way they would save a considerable amount of money, and the health of the county would be looked after more efficiently.

Dr. Thomas Walsh, professor of pathology in Galway University, and an ex-chairman of the Galway Board of Health, gave evidence in support of the alternative scheme put forward by himself and his colleagues. They had the existing machinery, and it was only a question of co-ordinating it. What he felt about the department's proposal was that they had an exact knowledge of its extent. If they inspected schools and set up child welfare centres, it would be useless unless there was treatment of all defective scholars. An effective scheme of this kind would mean that four or five extra doctors would be required, and he did not think this expense was justified. The great obstacle in County Galway was poverty, but, unfortunately, they could not touch it.

Salaries of Medical Officers.

At the last meeting of the Wexford County Health Board a letter was read from the Department of Local Government and Public Health stating that the scale salary of £200 a year, increasing by £5 to £250 a year, proposed to be adopted by the board for medical officers of dispensary districts in the county, was inadequate, and compared very unfavourably with the salaries in operation for similar duties in adjoining counties. The Minister requested the board to reconsider this matter, and to adopt a scale for these officers having a maximum of at least £300 a year.

England and Wales.

Hospital Saving Association.

THE PRINCE OF WALES attended the annual meeting of group representatives of the Hospital Saving Association, which was held on November 25th, at Kingsway Hall, London. His Royal Highness remarked that he himself, as president of the King Edward's Hospital Fund, took part in some of the consultations which led to the launching of the Hospital Saving Association, and was present at meetings when Sir Alan Anderson, Lord Knutsford, and others suggested the scheme. The growth of the association during seven years had been amazing; there were now over 800,000 contributors, and he saw no reason why the million mark should not be reached within a year. The secret of this rapid growth, the Prince continued, lay in the fact that this was a voluntary movement for the help of the hospitals and for the mutual help of the contributors. The "threepenny bits" which made up the staple of the contributions had come in with a regularity "which might cause envy to the tax collector." The association was laying down a very sound basis of finance for the voluntary hospitals. He emphasized the altruistic side of the endeavour, that the contributions were made, not merely or chiefly as an insurance for the contributor, but to "help the other fellow," and as a token of thankfulness that one did not need hospital treatment oneself. He reminded the gathering that these sums did not meet

the full cost of hospital provision, which the modern methods of medical science caused continually to become more expensive, but the association did enable the hospitals to maintain an open door, and eased the anxiety of those responsible for their management. Lord Knutsford and Mr. A. V. Alexander, First Lord of the Admiralty, briefly spoke, the former remarking with regard to the new council hospitals, that he hoped they would be able to take many of the cases which for lack of accommodation had been too long awaiting admission to the voluntary hospitals. Mr. Alexander confessed that after the war he and many of his colleagues thought the situation of the hospitals so serious that there would have to be a much wider provision of State hospital service than had hitherto existed. But there had been an extraordinary recovery in hospitals and hospital finance, especially in the provinces. He wanted to see a complete co-ordination between the voluntary hospitals and those now described as council or municipal. Mr. Stanley L. Duff, secretary of the National Conference of Approved Societies, also addressed the meeting.

The eighth annual report, which was presented, showed that during the twelve months ending in July the number of contributors increased by 158,431, now reaching a total of 810,444. The amount of contributions paid during the year was £438,354, compared with £320,714 in the previous year. During the year 238,929 contributors or their dependants had been treated at voluntary hospitals, and of these, 44,340 were in-patients, who were in hospital for a total of 911,873 days, an average of 20½ days per case. The revenue account for the year showed a credit balance of £22,059. The total payment made for hospital services for the year would be, after the final distribution had been made, £325,781, of which £264,324 was direct payment to voluntary hospitals, £37,899 direct payment to rate-aided institutions, and the remainder refunds of hospital payments made by contributors.

Care of Feeble-minded in Birmingham.

In his report for the year ended March 31st, 1930, Dr. A. M. McCutcheon, medical superintendent of Monyhull Colony and Monyhull Residential School for Feeble-minded and Epileptic Children takes the opportunity, the year under review being the last in which the work was carried out under the authority of the board of guardians, of recording briefly the history of the colony since its establishment in 1908. Important developments took place in 1912, when new homes were planned, in 1914 when the "Haunch" was leased for adult female patients, in 1924 when "Trostery" was bought and equipped for the same purpose, in 1925 when two new homes were built, and in 1928 when provision was made for the night nurses' home. But Monyhull, as a modern specialized mental hospital, developed mainly from 1921, in that year receiving recognition as a training school for nurses, and a year later similar recognition by the University of London as a place of study for the diploma in psychological medicine. In 1923 it was incorporated in the Birmingham Joint Board of Mental Research. During the year under review 1,346 patients were dealt with in the colony and residential school, 1,206 of these remaining in residence on March 31st. An analysis of the discharges shows that 47 patients were transferred to the adult section, 19 to their parents and other authorities, 37 to hospitals and other institutions, and 1 on licence. In addition there were 17 cases of absconding, 2 of failure to return from leave, and 17 deaths. Applications for discharge work out at 1 in 74 of the average daily population, a satisfactory figure when allowance is made for the fact that some parents, failing to appreciate the true mental condition of their children, make repeated demands for discharge, to which, in most cases, the Board of Control finds itself unable to accede. Of the patients in residence 9 are classified as idiots, 248 as imbeciles, 931 as feeble-minded, and 18 as sane epileptic. Included in the first three categories are 259 patients with epilepsy as an added defect. In the circumstances the figures relating to occupational training are very satisfactory; during the year under review all the shops were busily occupied, the patients—namely, 373 males and 449 females—showing the greatest interest in their work. Only 19 males and 11 females are classified as not suitable for regular employment. In the school 429 children were dealt with during the year; of these 72 have been discharged, in every case with appropriate recommendations as to future training and control.

Medical Examinations of the L.C.C. Staff.

The London County Council is considering the question of the arrangements to be made for the conduct of the medical examination of the council's staff after the retirement in Febuary next of Sir John Collie, the present medical examiner. The General Purposes Committee has come to the conclusion that the most satisfactory arrangement would be to entrust the work of medical examination, with certain exceptions, to the medical officer of health and school medical officer, who at present acts in this capacity in respect of the teaching and certain other staff under the direction of the Education Committee. This would ensure a common standard of examination; all records would be in common form, and the great resources which the council now possesses in respect of consultants, laboratory facilities, hospital accommodation, etc., would be readily available. Medical examination in the council's service takes place before admission, after a prolonged period of sickness, after accident on duty, and when the question of physical fitness to remain in the service is in question. The number of examinations amounts to over 20,000 a year. The adoption of the proposal will involve the appointment of one additional principal medical officer. The report of the committee adds: "We think it proper to state that the medical officer is suffering very severely at the present time from intense pressure of work arising out of the Local Government Act, 1929, and for this reason hesitates to undertake additional work of a very responsible character, as he feels he could not conscientiously discharge his duty to the council in connexion with it unless the facilities mentioned (certain details regarding staff and adaptation of accommodation) are available.

India.

Standardization of Medicinal Drugs.

THE Government of India, after obtaining the approval of local Governments, has now decided to appoint a small committee to explore and define the scope of the problem of the standardization and preparation of medicinal drugs. It is further instructed to ascertain what measures may suitably be taken to regulate their subsequent supply to the community. The terms of reference to the committee are as follows.

1. To inquire into the extent to which drugs and chemicals of impure quality or defective strength, particularly those recognized by the *British Pharmacopoeia*, are imported, manufactured, or sold in British India, and the necessity in the public interest of controlling such importation, manufacture, and sale, and to make recommendations.

2. To report how far these recommendations may be extended to known and approved medicinal preparations other than those referred to above, and to medicines made from indigenous drugs and chemicals.

3. To inquire into the necessity of legislation to restrict the profession of pharmacy to duly qualified persons, and to make recommendations.

The committee, which will have as its chairman Lieut.-Colonel R. N. Chopra, I.M.S., professor of pharmacology in the Calcutta School of Tropical Medicine and Hygiene, will visit important centres in the provinces and will collect evidence in this respect. It will also prepare a questionary for issue to persons and corporate bodies likely to be able to throw light on the matters at issue.

The Pasteur Institute, Calcutta.

According to the annual report for 1928 of the Pasteur Institute, Calcutta, over 24,000 patients have received a complete course of treatment since the institute was established in 1924. In five years the total number of patients has increased from 1,995 to 9,576—apparently the highest

number recorded in any Pasteur institute in India. There is evidence, however, that many deaths occur every year among those who do not, or cannot, attend the institute for treatment. In Bengal alone, excluding patients who received treatment, at least 400 deaths from hydrophobia were reported in 1928. The report states that, since about one in every sixteen of the untreated cases is estimated to develop this disease, probably about 6,000 persons in Bengal infected by rabid animals received no treatment during the year. This figure is expected to be reduced as vaccine treatment becomes more widely available. Good results appear to have followed the broadcasting of information about rabies by the Department of Public Health. Out of 7,529 persons treated, only 54 died of hydrophobia—a rate of 0.72 per cent. This is the lowest in the history of the institute.

Medical Services of the G.I.P. Railway.

The annual report of the medical department of the Great Indian Peninsula Railway for 1929–30 is chiefy concerned with the incidence of malaria among the railway's employees, who number as a rule over a million. In recording a decrease of 10,000 cases during the year, Dr. R. J. L. Sladen, principal medical and health officer, states that the expenditure incurred on the treatment of this disease was nearly a fifth of the total cost of sickness. Compared with the figures of the previous year, the most noticeable improvement evidently occurred in the Jubbulpore district, where the number of cases decreased by more than a thousand. Among the anti-malaria educational measures adopted, large-scale maps were used to exhibit the results of malaria surveys, and breeding places shown on the maps are reported to have been regularly and systematically dealt with. Influenza was prevalent among the staff throughout the whole system; the total number of cases recorded was 5,814, an increase of 1.9 per cent. over the figure of the preceding year. Employees suffering from pulmonary tuberculosis are considered unfit for continued employment, and are generally invalided out of the service; the rate of mortality from this cause is estimated to be 12 out of 149. A slight increase is reported in the number of patients treated for venereal diseases, but it is suspected that information is sometimes withheld through fear of publicity and punitive action. During a small-pox epidemic, which lasted from January to March of this year, arrangements were made at all the hospitals and dispensaries belonging to the Peninsula Railway to vaccinate the members of the staff and their families free of cost. Primary and secondary vaccinations for the year numbered 10,678, compared with a total of 4,212 in 1928. Another section of the report deals with injuries caused by accidents; these amounted to 213 incurred by passengers, and 2,018 in the case of railway servants, the occurrence of fatal accidents per 100,000 passengers carried being 0.01. To give effect to a resolution passed at the eleventh International Labour Conference regarding the prevention of industrial accidents and the organization of "safety first" propaganda, a central safety council has been established, consisting of representatives of the transportation, engineering, mechanical, commercial, and medical departments; committees have also been set up at seven local centres. As their object is to provide a means of educating employees in matters affecting their own safety, an opportunity is given for making suggestions and for discussing the results obtained by the various measures. Rapid progress continues to be made in educating employees in first-aid work. Up to the end of the period under review the total number successfully trained was 2,739, which was equivalent to about 2.49 per cent. of the staff.

Correspondence.

MENTAL TREATMENT ACT, 1930.

SIR,—With reference to the Explanatory Memorandum on the Mental Treatment Act, 1930, published in the *Supplement* of November 29th, may I point out two inadvertent mistakes, one of commission, and the other of omission.

Under the section "Voluntary patients," and again under the section "Temporary patients," it is stated that these temporary patients are to be admitted under certificates from two medical men. This should read recommendations, as the word "certificate" is thought likely to offend the susceptibilities of the public.

Under para. 3 relating to certificated patients, there is an alteration inasmuch as the provision for Urgency Orders is extended to all patients certified under the Lunacy Acts instead of being confined to those who are to be dealt with in private institutions.—I am, etc.,

Bath, Nov. 29th. R. G. GORDON.

SIR,—I trust that you will be good enough to allow me to point out that in the very serviceable Explanatory Memorandum on the Mental Treatment Act, 1930, drawn up by the British Medical Association, there are several minor inaccuracies which, if uncorrected, may give rise to some misapprehension among medical practitioners.

First, with regard to the medical recommendation required in the case of a person under 16, on whose behalf a written application is made for voluntary treatment, this may be made by the patient's own doctor, or by a practitioner approved by the Board of Control or *approved by the local authority within whose area the person to whom the application relates then is.*

Secondly, as regard temporary patients, the Act is careful to avoid the word "certification" in this respect. The necessary application must be accompanied not by two medical certificates, as stated, but by two recommendations. It is as well to add also that no recommendation shall have effect on the expiry of fourteen days from the date on which the person to whom the recommendation relates was examined by the two medical practitioners, or, if he was examined on two different dates, on the expiry of fourteen days from the later of them.

And lastly, the memorandum states that the procedure is not altered for certified patients. That is so, except in respect of the Urgency Order. Hitherto, the use of Urgency Orders has been confined to private patients, but by Section 17 of the Mental Treatment Act, 1930, it will be possible to admit a rate-aided patient to a public mental hospital under an Urgency Order signed by a duly authorized officer of the local authority within whose area the patient is. This is a wise and beneficial provision.—I am, etc.,

Beverley, Yorks, Nov. 29th. T. M. DAVIE, Medical Superintendent, East Riding Mental Hospital.

SIR,—In the *Supplement* with to-day's issue of the *British Medical Journal* an Explanatory Memorandum in regard to the new Mental Treatment Act is published. The document is not signed, and consequently one cannot appreciate the authority behind it. It is at all times most difficult to state in concise sentences the relevant facts of any Act of Parliament. This memorandum is inaccurate and misleading, and should be withdrawn. May one express a hope that this communication will be published and so act as a warning to the medical profession in regard to the Explanatory Memorandum.—I am, etc.,

Hove, Nov. 29th. E. ROWLAND FOTHERGILL.

*** We have referred this correspondence to the Medical Secretary, who writes: The memorandum was drawn up as directed by the Council. As regards its alleged inaccuracies see the letter by Dr. Gordon, one of its authors. Unfortunately time did not allow of his seeing a proof.

TEMPORARY TREATMENT WITHOUT CERTIFICATE.

SIR,—The correspondence of the last few weeks on temporary treatment without certification brings out very clearly the confusion that exists concerning the meaning of Section 5 of the new Act, which deals with the question. If Dr. Vernon Davies's interpretation is accepted—and he is in an exceptional position to give an interpretation—that the form of words, "incapable of expressing himself as willing or unwilling to receive treatment," means literally what it says, then it would appear that the intentions of the promoters of the Act have been practically nullified; for I do not think the section so interpreted will apply to 5 per cent. of the admissions to mental hospitals.

The carrying out of the section, however, will depend upon the view taken by the Board of Control. That the Commissioners may not hold the same opinion as Dr. Davies is indicated by the reference in their last report to the epoch-making character of the change caused by this section. Having regard to the obscurity of the situation, the importance of the point at issue, and the short time that now remains before the Act comes into force, it would be helpful to all concerned for the Board to make known its official interpretation.—I am, etc.,

London, W.1, Nov. 29th. FREDERICK DILLON.

ROLL OF BIO-PHYSICAL ASSISTANTS.

SIR,—Will you allow me space to express the appreciation of the council of the Chartered Society of Massage and Medical Gymnastics of the steps taken by the British Medical Association to bring the Roll of Bio-physical Assistants to the notice of medical practitioners. The inclusion of the topographical section of the Roll in the *Supplement* to the *British Medical Journal* of November 15th is certainly a practical way of making known this register of "persons competent to dispense the direct current, ionization, faradic currents, sinusoidal currents, diathermy, high-frequency currents, light and heat, and ultra-violet light."

The majority of those admitted by the Society of Apothecaries to their register of lay assistants have qualified first in massage, and, being members of the Chartered Society of Massage and Medical Gymnastics, are entitled to use the distinctive title of Chartered Masseuse or Chartered Masseur. The privilege was allowed by the Privy Council with a condition that the title was used only *without abbreviation*, and, in view of this understanding, the council was concerned to find that the initial letters have been used in the reference made in the Roll of Bio-physical Assistants as it appears in the *British Medical Journal*. There was not an opportunity to correct the omission before publication, but our regret for the occurrence, together with a reference to the circumstances, has been conveyed to the Privy Council, and has been accepted by it. The council is glad to have this opportunity to inform readers of the *British Medical Journal* that the designation allowed to members of the Chartered Society must be used by them in full—Chartered Masseuse or Chartered Masseur.—I am, etc.,

R. C. ELMSLIE,
Chairman of the Council of the C.S.M.M.G.

London, Nov. 25th.

THE WORK OF LABORATORIES.

SIR,—My friend Sir Walter Fletcher, speaking of me in to-day's issue of the *British Medical Journal* (p. 928), says that when opening the Banting Institute of Toronto I "took occasion to belittle the work of laboratories." What I wrote of laboratory experiment was (*Lancet*, 1930, ii, 779): "Yet when fullest allowances are made, the method remains one of extreme importance, of most fruitful results, of a value indeed second in accuracy and relevance only to that of direct hominal research itself, with which, whenever possible, it should be combined"; and again: "Let no one for a moment suppose that I am critical of the methods or results of collateral experiment, or of their great value in illustrating and elucidating the problems of hominal disease." Is this "belittlement"?

A further charge is made that I "thought that the idea that the laboratory workers did, or could, hand over new weapons for the physician to use was laughable." My statement with regard to laboratory workers was in the nature of a comment upon the following question asked in the annual report of the Medical Research Council. "Is scientific work by the physician or surgeon limited to the application in his art of scientific results worked out elsewhere in the laboratory, and delivered to him for use?" and I said, "The assumption inherent in the question that ready-made weapons are fashioned in the laboratory and handed over with magisterial authority to the physician, who humbly acquiesces in their prescribed use, is too amusing for serious discussion."

Sir Walter Fletcher is here twice guilty of grave offence. He garbles a story to deny it. It is not true that I took occasion in my address to belittle the work of laboratories. I praised such work and pleaded for its extension to human problems. It is not true that I was laughing at "the idea that laboratory workers did, or could, hand over new weapons," but it is true that I found the question as to whether the scientific work of physicians and surgeons was *limited* to the application of laboratory results very amusing. There is all the difference between my statement and the corrupt versions given by Sir Walter Fletcher, who, to my sorrow, has so egregiously failed to capture the spirit of my address.

Sir Walter Fletcher is Secretary of the Medical Research Council, and research implies a disinterested pursuit of truth. He should therefore be quick on the scent of truth, and be its guardian and apostle. I am wounded in the house of my friend when I find it agreeable to his standards of accuracy, even in so small a matter as this, to injure truth so wantonly.—I am, etc.,

London, W.1, Nov. 29th. MOYNIHAN.

ANTIMALARIA MEASURES.

SIR,—Colonel Gill has now defined his position clearly. The reports, articles, and books on antimalaria work in Malaya speak with no meaning to him. To him the results are "equivocal." Major Walker, R.A.M.C., published in the January number of the *Journal of the R.A.M.C.* an excellent article entitled "Antimalarial measures in Malaya." In it he says:

> "The result of all this work has been the opening up of vast tracts of hitherto forbidden land, the saving of thousands of lives and dollars, and of necessity a tremendous improvement in the general economic condition of the country. Millions of dollars have been expended on this work, but they have been returned a hundredfold."

Governments, Councils, State Boards, directors of companies, officials and unofficials, private citizens, Europeans and Asiatics, have spent millions over a period of thirty years. If Colonel Gill is right, they have been, in spending this money, very foolish. If they have been right, what are we to say of Colonel Gill? I leave it to your readers. But can we be surprised that the work in Malaya has no lessons for him in India?—I am, etc.,

Ross Institute, S.W.15, Dec. 1st. MALCOLM WATSON.

RESULTS OF TREATMENT OF CANCER.

SIR,—As there may be delay in arranging such an exhibition of cases as Mr. Fitzwilliams suggests in his letter published on November 29th, may I say that I am quite ready to accept his challenge to exhibit cases of breast cancer treated by *x* rays. My colleagues would probably agree to certain of their patients being shown at a Sectional meeting of the Royal Society of Medicine. Might I suggest that my work is not conducted in the dark? For the past nine years at the Middlesex Hospital I have seen cancer and other patients treated by *x* rays in a follow-up clinic at 2.30 p.m. on Wednesdays; radium patients are now seen on Mondays at 11.30. Any medical man who wishes to see patients is welcomed.

As regards tongue, rectum, and cervix cases, my experience is almost entirely confined to "prophylactic" radiation after operation, or to patients inoperable, or with inoperable recurrences. Dr. Hernaman-Johnson some years ago replied to a somewhat similar challenge from Mr. Victor Bonney by showing how limited the gynaecological material sent to radiologists is in this country.

Mr. Fitzwilliams mentions three sites in which radium is generally accepted to be of greater value than *x* rays (that is, than the *x* rays of the present, and as now employed). Had he instanced cancer of the thyroid, of the testicle, and cranial tumours his challenge would have been more generously framed, and could have been more easily replied to.

I propose to give a further paper on the treatment of operable cancer of the breast by *x* rays and radium at the Third International Radiological Congress next July in Paris; this will review my work to date, and show some five-year results. At the same congress I believe there will be remarkable results brought forward from the *x*-ray treatment of cancer of the oesophagus, by a new technique from a Continental clinic. We advance by degrees; and Mr. Fitzwilliams might be gently admonished to ponder on Renan's saying that "La verité consiste dans les nuances." —I am, etc.,

London, W.1, Nov. 29th. J. H. DOUGLAS WEBSTER.

GLYCERIN IN MIDWIFERY.

SIR,—In all confinements there is a certain amount of injury to the perineum varying in degree—for example, bruises, lacerations, and tears. Tears are stitched. The only other treatment seems to be cleansing with weak antiseptic lotions by the nurse in attendance. Bruised, lacerated, and oedematous tissue is the most likely field for micro-organisms to flourish in. During the puerperium the damaged tissues are constantly bathed by lochia and vaginal secretion. The reaction of the latter is altered. These and the close proximity of the anus tend to favour the presence and growth of bacteria.

It seems desirable in such cases to use an application which would inhibit the growth of bacteria, reduce oedema, encourage healing, and at the same time be soothing and comforting to the patient. To obtain these results I find warm glycerin the most effective. Glycerin does not evaporate, is powerfully hygroscopic, and inhibits the growth of bacteria, particularly the cocci and *coli* group, the causal organisms of puerperal sepsis.

I first used glycerin in the puerperium for its soothing effect on haemorrhoids. I was so pleased with its healing effects on the perineum that I now use it as a routine practice at every confinement. Cases treated by this method showed no signs of sepsis.—I am, etc.,

November 24th. RONALD MACKINNON, M.B., Honorary Pathologist, Oldham Royal Infirmary.

CYANOSIS WITH COLLAPSE.

SIR,—Blue sickness, or cyanosis, occurs to-day in quite a number of chemical industries, and its significance varies with the cause. In mild cases—nitrous fume inhalation, for instance—there is merely a loose linking up of the oxyhaemoglobin with the nitric body to form a nitric-oxide-haemoglobin, a forerunner of methaemoglobin, and such cases are very easy to re-oxygenate. Occasionally there is an observable cyanosis, with normal blood and perfect health, a not uncommon state in T.N.T. operatives. In the benzene group conditions are altered, and become pathological. Both the amido and nitro derivatives discharge the haemoglobin from the red cells and fix the oxyhaemoglobin. Aniline, which is amidobenzene, possesses this toxic property, and the nitro-anilines, and particularly para-nitraniline, an important body in many technical processes, has this toxicity in much greater amount than aniline. Nevertheless, I doubt very much if methaemoglobinaemia is the diagnosis for Dr. Lempriere's case (*Journal*, November 22nd, p. 892). There is not enough benzene chemical (nitro or amido) to bring about this issue in one drop of dye. The details are: "Some on his lips and a drop in the mouth, immediately washed."

We have to remember that before clinical signs of poisoning by methaemoglobin appear a very considerable quantity has to be present. W. J. Dilling places it at 40 per cent. of the oxygen present, and states that it is only when this figure is reached that the characteristic bands show in the spectroscope. Seen thus, the case is: "Can 40 per cent. of the oxyhaemoglobin present in a boy of 14 years be fixed by the atoms present in a drop of an aniline dye?" The only answer is, "Yes, by catalysis"; and while this might appeal to a chemist as a reasonable answer, it is from a medical standpoint a *reductio ad absurdum*.

But Dr. Lempriere's letter has the great interest that it points to another possible form of aniline poisoning. Many industrial physicians believe that particularly the nitro derivatives of benzene poison the central nervous system, and that not all of the complex symptoms, including brain lesions, can be explained by the anoxaemia, and it may well be that this case in point supports this idea. My impression of what happened is as follows. The boy was probably using a pipette (his lips were stained), and drew some of the aniline dye into the fibre stopping in the incisor socket. It may have been one of the more toxic preparations, such as para-nitraniline. This would dissolve the lipoids in the incisive nerve, whence there is a direct track to the pons. I think the boy suffered from early narcosis and poisoning of the central nervous system, and that such a case might have been fatal.—I am, etc.,

Stevenston, Ayrshire, Nov. 24th. HARRY M. ROBERTS, Medical Officer, Nobel's Explosives Company Limited.

PARTURITION PER PERINEUM.

SIR,—The case described in your issue of November 22nd (p. 863) under the above heading is certainly very rare, but I had an almost identical case over twenty years ago, which was reported in the *Transactions* of the Glasgow Obstetrical and Gynaecological Society (vol. v, p. 148).

In my case, which was a persistent occipito-posterior presentation in a young primipara, I had applied the forceps in the usual way, when quite suddenly the perineum gave way in front of the anus, and the head appeared, to my consternation, through the "central tear," carrying the blades of the forceps with it. I had hardly time to get the forceps out of the way before the child was delivered "*through the laceration*." The anterior and posterior boundaries of the perineum remained intact, and the laceration began in front of the anus and ran obliquely forwards to the left side of the fourchette and fully two inches beyond that point.

The tear was carefully sutured, but the sutures had to be removed on account of sloughing. With rest in bed, however, and frequent bathing of the parts with a weak solution of perchloride, rapid healing took place, and the patient bore several children afterwards without any recurrence. The only explanation I can think of is the prolonged pressure of the head against the perineum. No anaesthetic was used, and very little, if any, traction was necessary.—I am, etc.,

Airdrie, Nov. 24th. ALEX. J. WILSON, F.R.C.S.Ed., D.P.H.

SIR,—I should like to record that four years ago I had a confinement case similar to that described by Drs. Tindal and MacLennan in the *Journal* of November 22nd. I was called to the case by a midwife, and on arrival found the child born, with the umbilical cord passing through a gap in the perineum of corresponding bearings to that in their patient. The placenta followed spontaneously by the same passage, and the gap subsequently was closed by catgut sutures. I am pleased to say that the gap healed and the patient got on well.

The woman was a multipara, and gave the same history of having been badly torn at the previous confinement. The perineum had been stitched, but evidently the distal sutures had not been inserted deeply, thus causing a dip in the upper portion of the vaginal passage, and a very attenuated perineal surface.—I am, etc.,

Seven Kings, Ilford, Nov. 25th. R. BOYD ROBSON, M.B., Ch.B.

SIR,—The memorandum by Drs. Tindal and MacLennan is most interesting, but the accident is by no means unique. Sir J. Y. Simpson recorded a case of "Perineal fistula left by the transit of the infant through the perineum" in the *Edinburgh Medical Journal* (1855, i, 1).

The patient, a primipara, was first seen by him a year after the confinement. An illustration was published along with the communication, and it was reproduced in the *Manual of Gynaecology* by Hart and Barbour. In his paper Simpson referred to two other cases. The first of these, described by Marter of Königsberg, was also a primipara, but, in spite of the fistula remaining patent, her second child was born naturally by the vulva. The second case was described by Halmagrand of Paris, who repaired the perineal tear. Her next child was born naturally. It is not stated whether she was a primipara or a multipara. In addition to these, the names of seventeen other medical men who have reported similar cases can be found in *Anomalies and Curiosities of Medicine* by Gould and Pyle (pp. 121–22). One of the cases quoted by them was recorded by Brown in the *Lancet* (1860, i, 496).—I am, etc.,

Waterloo, Liverpool, Nov. 25th. D. P. BLAIR.

DIATHERMY ENUCLEATION OF TONSILS.

SIR,—I am astonished at Dr. Dan McKenzie's "warning" (as he rather vigorously styles it) against the growing practice of enucleating tonsils by means of diathermy (*Journal*, November 22nd). He further states that "this is not the place to enter into a full disquisition on the subject," and ends by saying unkind things about anyone who unjustifiably disregards his letter.

Now I have a copy of Dr. McKenzie's excellent book at hand, and I note on page 64: "Enucleation by dissection can be safely and successfully accomplished by the diathermy knife." A description of his method and the control of haemorrhage follows, with the advice that "this method of inducing haemostasis by diathermy" may be used in the ordinary tonsil operation. On page 71, where he describes how "tonsils can be diathermized easily and comfortably under local anaesthesia," we find: "If the patient is nervous and the tonsil small, we limit ourselves to a *single* application of diathermy." Page 72 emphasizes my own observation that the patient's endurance is never seriously taxed; page 75 adds that he had had no personal experience of serious haemorrhage.

In view of the general interest in this work among practitioners, I should like to state briefly my experience of the last four years. One or two applications of diathermy are invariably sufficient when the technique described by me in the *British Medical Journal* of June 14th is carried out. Cocaine anaesthesia is always used *without* adrenaline. This latter addition appears to favour oozing; I believe the blood normally present in the vessels helps, when coagulated, to prevent bleeding. I do not agree with Dr. McKenzie's technique in this respect, and I personally feel that one month should elapse before the second treatment, should one be required. I hope my own experience will encourage others in a method which I believe to be as safe at any age as any treatment could possibly be.—I am, etc.,

Putney Hill, S.W.15, Nov. 22nd. WARNER COLLINS.

NOCTURNAL INCONTINENCE IN CHILDREN.

SIR,—In regard to Dr. Pereira Gray's memorandum in your issue of November 29th (p. 906), I have found ergot the only satisfactory drug in many cases of this distressing disorder. The liquid extract in five-minim doses to a child of 5 years, combined with half the quantity of liquorice and a drop of peppermint, often brings about permanent relief in a fortnight, and is worth a trial in most patients so afflicted. The prescription was published some years ago, and it is at last beginning to find its way into the textbooks, where belladonna and the bromides reigned for a century in masterly inactivity.—I am, etc.,

Widnes, Dec. 1st. ALEX. PATTON.

SIR,—Having extensive experience in genito-urinary surgery in a land where stone in the bladder was very prevalent—two-thirds of the stone in India is in children under 12 years of age—it was a very common thing for people to bring me children, and when asked what was the matter the reply came promptly: "Stone in the bladder." The villagers are familiar with the symptoms. The child is constantly fingering his penis and having erections and incontinence, and these are the symptoms common to stone and nocturnal incontinence. In this case, considering the prevalence of stone, the first thing to do is to examine for stone, but, no stone being found, the condition reduces itself to the prepuce, which will not retract, and is not improbably adherent. A circumcision is then done and the irritating secretion underneath the prepuce removed, and the symptoms of stone and the incontinence disappear at once. In my experience these cases of incontinence disappear after circumcision, and I am surprised that this fact has not yet been recognized in teaching institutions. I have been consulted about similar cases in this country, in which circumcision was followed by a similar result.—I am, etc.,

Sidcup, Nov. 30th. HENRY SMITH, C.I.E., Lieut.-Colonel I.M.S. (ret.).

COLLAPSE FOLLOWING ANAESTHETIC.

SIR,—Sir Maurice Craig's experience (described by him in your issue of November 22nd, p. 886) recalls the following to my mind.

About the year 1884 one of the house-surgeons at St. Bartholomew's Hospital chloroformed a cat. When it was apparently dead he took it by the tail and carried it out for burial. As he went across the square the cat recovered. He told Mills, "the chloroformist," about it, and I think it was after that that inversion was used in chloroform collapse. The matter was discussed with Henry Power, a keen physiologist, who said that the treatment was physiologically incorrect. On being asked what treatment he would adopt in such cases, he replied: "Oh, invert by all means, *but it's wrong*."

In my own experience I have seen three cases of collapse after chloroform in children. They all recovered rapidly on being treated by complete inversion.—I am, etc.,

Lynsted, Kent, Nov. 26th. PRIDEAUX G. SELBY.

LOTTERIES, SWEEPSTAKES, AND HOSPITAL FINANCE.

SIR,—Is the time not ripe for the British Medical Association to express an opinion on lotteries, sweepstakes, and hospital finance? The Hospital Policy of the Association is silent on this aspect of the hospital question. Why? Surely the medical profession will never consent to cure physical disease by propagating moral disease, and that is the meaning of financing hospitals by lottery and sweepstake. Gambling is an odious perversion of a natural and healthy instinct—the sporting or adventurous instinct—and its extension among the people of this country will sap their moral fibre, pervert their sense of value, and lower the prestige of the medical profession. If the hospitals cannot be financed by voluntary contributions, let them be put on the rates and taxes at once. The "bookie" must be kept out of the hospital question at all costs, and the British Medical Association should see to this.—I am, etc.,

Warrington, Nov. 26th. J. S. MANSON.

Universities and Colleges.

UNIVERSITY OF OXFORD.

THE Francis Gotch Memorial Prize for 1930 has been awarded to F. K. S. Hirschfield (New College).

UNIVERSITY OF LONDON.

THE Paul Philip Reitlinger Prize, offered this year for the best essay embodying the result of some research work on a medical subject carried out by the candidate, has been awarded to Joseph Adler, a student of King's College and Charing Cross Hospital Medical School, for his essay on "The action of histamine on gastric secretion after partial gastrectomy." The prize, of the value of £30, was founded with funds given to the University by Mr. Albert Reitlinger in memory of his son, a student of Middlesex Hospital Medical School, who died December 3rd, 1911. Next year the prize will be awarded for the best essay on "The long poem in the twentieth century."

DR. J. R. Lord, C.B.E., F.R.C.P., lecturer in clinical psychiatry, has been recognized as teacher in psychiatry at the London (Royal Free Hospital) School of Medicine for Women.

J. W. M. Alexander has passed the examination for the Diploma in Psychological Medicine, with special knowledge of psychiatry.

UNIVERSITY OF DUBLIN.

SCHOOL OF PHYSIC, TRINITY COLLEGE.

THE following candidates have been approved at the examination indicated:

FINAL MEDICAL EXAMINATION.—*Part II, Medicine:* G. F. Ennis, D. J. O'Ryan, W. Caldwell, T. H. Dockrell, C. H. Adderley, H. H. G. Dorman, D. Nolan, C. Bowesman, C. M. Elliott, A. J. O'Connor, Kathleen A. Wilson, C. Ryan. *Surgery:* G. F. Ennis, D. J. O'Ryan, W. A. Robinson, E. S. Duthie, H. H. G. Dorman, N. A. Kinnear, W. Caldwell, J. B. Scott, F. P. FitzGerald, D. G. Kennedy, H. S. North. *Midwifery:* *Elizabeth K. Roberts, *Margaret D. Gregg, *Marjorie L. Campbell, *H. F. G. Irwin, I. G. L. Ford, J. C. M. Brambell, H. V. Tighe, W. A. Hill, J. G. Wilson, T. F. O'Donnell, E. S. Samuels, T. M. R. Ahern, M. G. Leane, T. J. O'Sullivan, F. C. Jackson, N. H. Leask, R. C. Sutton, E. Morrison, J. A. Page, D. H. S. Boyd.

* Passed on high marks.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

AT a special meeting of the College held on November 21st the undermentioned successful candidates at the Winter Conjoint Final Examinations, 1930, of the Royal Colleges of Physicians and Surgeons, Ireland—namely, Patrick James Doyle, Eugene Robert Duggan, Robert James Randall, Abraham Louis Stein, Cecil John Coard Wilson—were duly admitted to the licences in medicine and midwifery.

Obituary.

JOHN HAMMOND TEACHER, M.A., M.D.,

St. Mungo (Notman) Professor of Pathology, University of Glasgow.

PROFESSOR JOHN HAMMOND TEACHER, who died on November 21st, was born near Glasgow in 1869, his father, the late Mr. William Teacher, being a prominent figure in Glasgow business circles for many years. He was educated at Glasgow Academy and University, graduating in arts in 1889, and in medicine with high commendation in 1893. After holding the posts of house-physician and house-surgeon at the Western Infirmary, he took up for some time the study of physiology under the late Professor McKendrick. Pathology, however, proved a superior attraction, and he moved to the pathology department of the Western Infirmary under the late Professor Coats.

Dr. Teacher soon established a reputation for painstaking and tireless research, developing a bent towards gynaecological pathology. In 1896 he spent an interesting year in Rio Tinto, where he was responsible for the control and treatment of malaria in the district. Returning to Glasgow in 1897, he undertook the arduous task of classifying and arranging the anatomical and pathological preparations of William Hunter. The masterly catalogue, which he published in 1900, is classical of its type, its value having been somewhat tardily discovered in recent years. While engaged in this work he was appointed pathologist to the Sick Children's Hospital, and assistant pathologist at the Western Infirmary. He became a Fellow of the Royal Faculty of Physicians and Surgeons in 1900. The outcome of his early researches in gynaecological pathology, conducted in Glasgow and Vienna, was a thesis for the degree of M.D., for which he chose chorion-epithelioma as the subject. A tribute to the completeness of his research is the fact that little of note has been added to knowledge of this subject since its publication. For this thesis he received an Honours M.D., with a Bellahouston gold medal for special excellence. Continuing his researches, Dr. Teacher was rewarded by the discovery of the earliest complete human ovum known. The description of the Teacher-Bryce ovum No. 1 is now a classic. In 1907 he was appointed lecturer in pathological histology under Professor Muir, and two years later he received the appointment of professor of pathology at St. Mungo's College, Glasgow Royal Infirmary. In 1911, when the new University chairs were founded in the Glasgow Royal Infirmary, he became the first professor of pathology, a position which he filled with distinction till his death.

During the last nineteen years of his life Dr. Teacher was mainly occupied in organizing his new institute of pathology, collecting around him an efficient staff, and placing on a sound and comprehensive basis the teaching of pathology at the Royal Infirmary. He also created a pathological museum, containing many unique and interesting specimens as well as the ordinary teaching preparations. At the time of his death he was engaged in the preparation of a complete museum catalogue. During the war Dr. Teacher's duties multiplied enormously, for, in addition to the work arising from the almost complete depletion of his staff, he undertook many military duties involving much exposure and anxiety. He felt this to be his duty as an old and enthusiastic Volunteer. In 1924 a second early ovum—Teacher-Bryce No. 2—was discovered and described. For nearly thirty years Dr. Teacher had collected, classified, and criticized innumerable preparations of gynaecological pathology, and he anticipated publishing his collected conclusions in the form of a book within the next year. His untimely death will delay, but, fortunately, not preclude, this publication. During last summer he attended the Annual Meeting of the British Medical Association at Winnipeg, when he made a communication, which was published in the *Journal* of November 29th (p. 896). In the course of this rather strenuous visit he consulted with many leading gynaecological pathologists in the United States and Canada, exchanging views on many important and partially clarified problems in their particular specialties.

Professor Teacher had many interests outside his professional life. His favourite pastime was yachting, and he devoted most of his leisure time in summer to this. He was an active member of the Royal Clyde Yacht Club and the Clyde Corinthian Yacht Club. Before the war his interest was mainly in the old 19–24 feet class, and when this class ceased to exist he compiled a historical "In Memoriam" volume, which was published in 1926. He then transferred his allegiance to the 6-metre class, taking part in the international yacht races held on the Clyde in 1928, when he sailed *Finvola* in the winning team. As recently as last summer he again participated in 6-metre racing on the American side. An old Rugby player, he was president for some years of the University athletic club, and was largely responsible for the post-war expansion of its activities. As consulting pathologist and member of the Board of the Glasgow Maternity Hospital, he worked strenuously and whole-heartedly to increase its efficiency and to check reaction in the management of the institution. He had a lifelong interest in the Marine Biological Station at Millport, stimulated originally by his association with the late Professor Young, and at his death he was a member of the Board of Management. For many years he acted as pathologist to the Glasgow Royal Cancer Hospital, latterly in a consultative capacity. He was a member of the Glasgow Radium Committee and of the Board of the Cancer Hospital, devoting much time and thought to the problems in connexion with the efficient application of radium therapy. In politics he was an enthusiastic and uncompromising Conservative. In private life Professor Teacher was singularly happy, and a wide circle of friends and acquaintances will extend their sincere sympathy to his widow.

J. A. C. B.

Professor ROBERT MUIR writes: I gladly avail myself of the invitation of the Editor to write about the late Professor Teacher, my friend and colleague.

I came to know him first when I began work in Glasgow in 1899. At that time he was assistant in physiology to the late Professor McKendrick, and was just completing his descriptive catalogue of the anatomical and pathological specimens in the Hunterian Museum—an able work, characterized by clear description and faithfulness to detail. Drawing his inspiration from his teacher, the late Professor Coats, he was interested chiefly in pathology, and on a vacancy occurring in the University department of pathology in 1903, I was glad to be able to secure his services. He worked with me there, first as assistant and afterwards as lecturer on pathological histology, till he became pathologist to the Royal Infirmary, being appointed shortly afterwards to the newly founded Notman Chair of Pathology in 1911. His main interest lay in the morphological side of pathology, and his knowledge became both wide and accurate. At an early period he was specially attracted by the problems of gynaecological pathology and, though he published articles on various subjects, these problems constituted his main subject of research. His papers on chorion-epithelioma attracted much attention;

they afford a good example of the high qualities of his work. The monograph by him and Professor Bryce on the early stages of development of the human ovum has been acknowledged as a masterpiece of its kind, and is still fittingly spoken of as "classical." For some time before his death he was engaged on a book on gynaecological pathology; I hope this may still be published, for in my opinion no one was better fitted for the task than he. His last communication, on the endometrium, was made at the British Medical Association Meeting at Winnipeg.

As has been indicated, Teacher's original work was mainly in pathological histology, in which field he had an unusually full command of technique. In carrying it out he spared no pains to attain accuracy, and was always fully alive to the difficulties of interpretation connected with observational methods. His standard was thus exacting as regards both labour and time; his conclusions did not come easily, but when arrived at were always reliable and worthy of attention.

Teacher took a keen and active interest in the students of the University, both in their work and in their play, and his knowledge of them and of their affairs often struck me as remarkable. He was a good friend to the athletic club, and had a large share in the endeavours which led to the acquisition and equipment of the new athletic ground. As a teacher of his subject he was faithful and successful, and I can testify to his excellence as an examiner; he was tactful, just, and considerate. A man of sterling character and generous nature, upright in all his dealings, and full of kindliness, with no small fund of humour, he was held in high esteem and affection alike by his students and his colleagues. He will be much missed in many spheres of University activity.

Professor W. BLAIR BELL writes:

I should like to be associated with any tribute that may be paid to the memory of my old friend John Teacher. Circumstances, almost chance, ordained that he should come to be regarded as a pathologist specially allied to obstetrics and gynaecology. His outstanding work on the physiology and pathology of the implantation of the ovum will always be classical; and it is to me a pathetic coincidence that his paper—published in the *British Medical Journal* last week, after his death—should deal with this subject, and express views which I myself have always held. I understand that Teacher has left much valuable manuscript on gynaecological pathology. I sincerely trust that this will be collected and published. Teacher was to have presented the pathological aspect of ovarian tumours at the discussion on the pathology and clinical features of ovarian tumours to be held in Glasgow next April during the British Congress of Obstetrics and Gynaecology. Three weeks ago I heard he had had a breakdown, and that he might not be able to fulfil this engagement. Within a few days I learned of his untimely passing. We who were his friends will miss him greatly, and our special subject has lost a brilliant student of a particularly difficult aspect of it.

DAISY ANNABELLA GALE, M.D.

By the death of Dr. DAISY ANNABELLA MURDOCH GALE (née CLARK) at her home at Diss, Norfolk, on November 23rd, Glasgow University has lost one of its most brilliant women graduates. The memoir that follows has been contributed by Dr. Elizabeth Sloan Chesser and Dr. Elizabeth Fraser Butler.

After a distinguished college career, she graduated M.B., Ch.B., and B.Sc. in 1900, and was then awarded a studentship in biology at Newnham College, Cambridge. At the close of her Cambridge career Dr. Clark applied for a resident post at Macclesfield Infirmary. The Governors had advertised the post without any proviso in the matter of sex, and since Dr. Clark was in their opinion the best of the applicants they offered her the post. The immediate sequel was the resignation *en bloc* of the visiting staff, there being nothing personal in this action, but only the expression of opposition to women being doctors. Dr. Clark would have relinquished the appointment, but she was strongly urged by the Governors and by her colleagues and teachers at her own university to take up her duties and demonstrate that a woman was capable of filling the post. With great courage she shouldered the task, remaining there for several months while the "boycott" lasted, and while newspapers and the general public fought her battle; her name appeared frequently in headlines, posters, and cartoons—an experience from which she shrank with all the dislike of a sensitive nature. During this period the entire work of the hospital was left in the hands of Dr. Clark and another young house-surgeon (a man). Since a deadlock had been reached in the affairs of the hospital, and she thought a sufficient protest had been made, she decided to retire from the post and to commence practice in the town. The Governors reluctantly accepted her resignation, and at the same time made her a gift of £100 in order to demonstrate to the world their satisfaction with the "lady doctor." This title had now become a household word in the town, and when Dr. Clark (together with Dr. Elizabeth Fraser, who had consented to join her as a partner for the first difficult years) put up her brass plate, it was found that there was already a large general practice awaiting her coming. There can be few instances where a doctor has found such a practice ready made and unbought—a practice comprising rich and poor, and consisting of men, women, and children. The influence of this test case and Dr. Clark's masterly handling of it did a service to the future generations of women doctors which it is impossible to overestimate.

After leaving Macclesfield Dr. Clark went out to the East, where she married Mr. C. Gale of Hong-Kong. She had two children, a boy and a girl; the husband and daughter survive her. During part of the war she held the post of deputy medical officer of health for Hong-Kong, and did excellent service in connexion with an epidemic of cerebro-spinal meningitis, of which there were no fewer than 1,000 cases in three months. This work formed the basis of her thesis for her M.D., which she obtained with commendation in 1920. She was always interested in research, and has published papers on the basal metabolic rate and other scientific subjects. In recent years she held the post of medical officer of the Carshalton maternity and child welfare centre, and of the North Lambeth child welfare clinic. She resigned these posts in order to devote herself to her son, who had sustained serious injuries as a result of a flying accident, and who was ill for about eighteen months in hospitals and nursing homes.

During the last few months, when Dr. Gale was facing the prospect of a painful death, she showed the same dauntless courage and cheerfulness that characterized her through all the vicissitudes of life. Annabel Gale was an exceptional woman, with a brilliant mind and a strong sense of humour. In her personality determination was united with kindness, and her critical outlook was associated with an immense tolerance and charity.

The death occurred on November 20th, at Seaford, of Mr. T. F. HUGH SMITH, F.R.C.S., in his seventy-fifth year. The eldest surviving son of the late Henry Smith, F.R.C.S., surgeon to King's College Hospital, Hugh Smith was educated at King's College, Strand, and later entered his father's hospital. In 1877 he qualified as M.R.C.S., L.S.A., and became house-surgeon to King's. In 1882 he became a Fellow of the Royal College of Surgeons. After a period of study in Paris, and after holding the post of house-physician at Brompton Hospital, he decided to take up general practice, and joined the late Dr. Ashurst at Farningham, Kent. There he speedily built up a large and widespread practice, which was certainly "general," in that it included every variety of work and all classes of society. And it was characteristic of Hugh Smith—a characteristic which endeared him to everyone—that, whether in cottage or castle, the patient of the moment was his only patient, and received all the skill and care which he had to offer. He was an excellent surgeon, and in his earlier years, when motors had not bridged the distance between London and Farningham, he found ample scope for his talents. He held the office of surgeon to the Kettlewell and Parkwood Convalescent Homes at Swanley, and was also medical officer to the Dartford Union. Hugh Smith was an active member of the British Medical Association, and a former chairman of the Dartford Division.

He was twice married. Seven years before he retired to Seaford he was joined in practice by his elder son, Major Sumner Hugh Smith, *M.C.* On his retirement in 1927 he was presented by his patients and friends with an address and a handsome cheque, the presentation being made by Sir William Hart Dyke on behalf of several hundred subscribers. Hugh Smith was once described by a former assistant as "the finest G.P. in England." Certainly to all who knew him in and around Farningham he stood out as the very highest type of country doctor. They realized his great professional skill, and they appreciated the simple sincerity and selflessness of his character. With him medicine was in truth a vocation, and the reward he valued most came from the hearts rather than the pockets of his patients.

Dr. THOMAS WOOD LOCKET died at Bratton, Wilts, on November 18th. The son of George Locket, he was born at Mill Hill sixty-two years ago. He was educated at Christ's College, Cambridge, and Middlesex Hospital, and graduated M.A., M.B., B.Ch. in 1893, afterwards becoming house-surgeon at the Royal Berkshire Hospital, Reading. He then practised in Atherstone, and in 1902 settled down in Melksham, where he soon acquired a large practice. From the beginning he took an active interest in the work of the British Medical Association, and was chairman of the Trowbridge Division from 1921 to 1924. He was a member of the Wilts Panel Committee and the secretary from 1913 to 1924. When he resigned the secretaryship the medical men of the county presented him with a silver salver. This was a well-deserved appreciation of the good work that he had done for the profession, both as secretary and as a member of the Insurance Acts Committee, and especially of the Rural Practitioners' Subcommittee. The money subscribed for the salver was more than enough, and with the balance he bought a silver cigarette box for the use of the chairman of the Division. Everyone realized his thoroughness, his unfailing attention, his sound judgement, and his good nature; he was everybody's friend, and can have had no enemy. Dr. Wood Locket retired from practice four years ago, and took up scientific fruit growing. His farm at Bratton was well known throughout the West of England, and he did a lot of useful work in promoting better methods of fruit culture. He always took an active interest in Church work, and especially in the various men's societies associated with the Church, both in Wiltshire and in neighbouring counties. His wife was a devoted nurse during his last long and painful illness, so much so that she tired herself out and died from an attack of pneumonia less than forty-eight hours before her husband. When he was told of her death he said: "There will be no one to meet her there." These, his last words, were characteristic of the man and his life. Husband and wife were cremated at Bristol, and at the same time a memorial service was held at Bratton. The large attendance of people of all classes and many medical men was evidence of the affection and esteem in which he was held by all who knew him.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons this week agreed to a resolution for increasing the Treasury loan to the Unemployment Insurance Fund. It also discussed the School Attendance Bill, and the Expiring Laws Continuance Bill, in committee.

On December 1st the Public Health Advisory Committee of the Labour party, and the Education Committee of the same party, formed jointly a subcommittee on the health of school children, with Mr. Somerville Hastings as its chairman. This subcommittee will take evidence on tuberculosis, rheumatism, and orthopaedics. Witnesses will be heard from the Society of Medical Officers of Health. The subcommittee is to report on the efficiency of examination and treatment under the school medical services. It will also consider the nutrition of school children and the health of the child below school age.

The Health and Housing Committee of Conservative members of Parliament discussed housing on December 1st.

Physique of Recruits.

Mr. T. SHAW, replying to Major Glyn on November 25th, said that for the recruiting year 1928–29, the latest period for which information was available, the main disabilities leading to the discharge of recruits were: disease of the middle ear, defects of the lower extremities, disease of the heart, and defective vision. An investigation now being carried out in the London area appeared to show that the general physical standard of the recruits actually accepted in that area was, if anything, higher than that of recruits accepted before the war. He was informed by the Army medical authorities that the physical development of recruits during their first six months of training was most satisfactory, and that weight was put on at the depots to the average of 6¼ lb. Figures were not available as to the weight increase after three months' training, but both the general physical development and increase in weight were steadily and evenly progressive.

Poison Gas.

On November 25th Mr. SHAW, replying to several members, said that he could not say when finality would be reached in the research and experiments in defence against gas. The work had purely defensive measures in view. Every endeavour was made to ensure the strictest economy. No soldiers were "gassed" at Porton, in the ordinary sense of the word. Volunteers, averaging some six a week, underwent tests with the object of proving the efficacy of preventive and curative treatment for skin burns, and of confirming the adequacy of the protection afforded by respirators. The comparative effects of the poison gas on living animals and human beings were studied in the laboratories and by practical tests.

Fatalities following Diphtheria Inoculation.

Mr. GREENWOOD, replying to Mr. Freeman on November 27th, said his attention had been called to newspaper reports of the deaths of sixteen children at Medellin, Colombia, alleged to have resulted from the administration of diphtheria toxin instead of antitoxin, but he had no official information. Mr. Freeman asked if the Minister would prohibit similar operations on children in this country. The Minister, in reply, said that none of the deaths from similar causes during the last few years detracted in any way from the value of the practice of the active immunization of persons shown to be susceptible to diphtheria, when undertaken with suitable safeguards. He had no power to prohibit similar operations, even if it were desirable to do so. Mr. Smithers asked how many lives had been saved by this operation. The Minister did not reply.

Replying to a further question by Mr. Freeman on the same day, Mr. GREENWOOD said he had had inquiries made into the case of a girl of Upminster, aged 13, who died on October 2nd, 1930, following a serum inoculation against diphtheria. This was an accident in private medical practice. Fatalities following the prophylactic use of diphtheria antitoxin were very rare, and, save in the most exceptional cases of extreme susceptibility, the risk was negligible. He had no power to interfere with the discretion of medical practitioners in the treatment of their patients.

Mental Deficiency.

On November 27th, in reply to Dr. Fremantle, Mr. GREENWOOD stated that during the last five years the total number of mental defectives ascertained by local authorities under the Mental Deficiency Act had increased from 48,778 to 71,430—that is, from 1.29 to 1.81 per 1,000 of the total population of England and Wales. The ascertainment was not complete, and results varied in different areas. In these circumstances it was impossible to say whether the number of defectives was increasing in proportion to the total population or to frame a conclusive estimate of the present number; but in certain areas the ascertainment by local authorities had reached 5 per 1,000.

In reply to a question on November 27th, Mr. GREENWOOD said that information on the success or otherwise of measures for the sterilization of mental deficients in foreign countries was received from time to time, but most of the legislation was of recent date, and he was not in a position to estimate its value. The issue was not one which could suitably be made the subject of a separate inquiry.

Vaccination.

In reply to Mr. Groves on November 27th, Mr. GREENWOOD said that thirteen deaths occurred among the small-pox cases tabulated on page 70 of the report of the chief medical officer of the Ministry of Health for the year 1929. The deaths were distributed as follows: 3 among persons successfully vaccinated; none among persons successfully revaccinated; 9 among persons unvaccinated; 1 death of a person whose vaccinal condition was doubtful.

On the same date Mr. FREEMAN asked Mr. Greenwood whether, in view of the continued occurrence of deaths from post-vaccinal encephalitis and other post-vaccinal diseases, notwithstanding the changes which were made in the method of vaccination on

October 1st, 1929, he would consider legislation at an early date to repeal the compulsory clauses of the Vaccination Acts. Mr. Freeman further asserted that for many years vaccination had been a greater cause of death among children than small-pox. Mr. GREENWOOD said he had under consideration the whole subject of vaccination, but could not in present circumstances undertake to introduce legislation dealing with this question.

Medical and Dental Benefit.—On November 27th, replying to Mr. Rhys Davies, Mr. GREENWOOD stated that he did not consider any revision was required of the present method of charging approved societies for regional medical and dental services. These services were equally available to all societies, and proper recourse to them was desirable in the interests of good administration. Mr. Rhys Davies remarked that some societies utilized these services to a much greater extent than others, causing inequalities in the charges on their funds. Mr. Greenwood answered that this point was sufficiently met by the payment by the society of a fee for each case referred.

Change of Doctor.—Mr. GREENWOOD, on December 1st, told Mr. Rhys Davies that he had come to the conclusion that he ought to modify the relevant part of the Medical Benefit Regulations so as to require a longer period to elapse before effect was given to a notice by an insured person of his desire to transfer to another insurance doctor. Details of the procedure would be discussed with the representative bodies concerned as soon as possible.

Inspection of Maternity Homes.—Replying to Dr. Bentham on November 27th, Mr. GREENWOOD stated that the routine inspection of voluntary maternity homes was carried out by the responsible local authorities. Maternity homes which were in receipt of grants from his Department for the training of midwives were inspected periodically by a medical officer of the Department. He had retained the right to instruct his officers to visit any maternity home as occasion arose.

Lotteries and Hospitals.—On November 26th Sir Nicholas Grattan-Doyle asked the Prime Minister whether, seeing the success attending the Irish lottery on behalf of the Dublin hospitals, he will give facilities for the passing of legislation to legalize in this country the holding of sweepstakes or lotteries in aid of London hospitals or for kindred purposes. Mr. RAMSAY MACDONALD: I can hold out no prospect of time being found for discussion of this subject.

Infant Mortality.—Mr. GREENWOOD, in reply to the Duchess of Atholl on December 1st, gave figures of the number of deaths of infants under 1 year of age per 1,000 live births in England and Wales as follows: 1910, 105; 1913, 108; 1920, 80; 1921, 83; 1922, 77; 1923, 69; 1924 and 1925, 75; 1926 and 1927, 70; 1928, 65; and 1929, 74.

Notes in Brief.

During the first ten months of 1930 there were 831 deaths from accidents in coal mines, and 3,119 persons were seriously injured. The death rate per 1,000 persons employed was 0.86, compared with 0.93 for the first ten months of 1929.

Replying to Mr. White on November 27th, Mr. Greenwood said that the work of the British Red Cross Society's clinic for rheumatism was making satisfactory progress. He was always prepared to consider any scheme put forward by local authorities or others for the treatment of rheumatism.

Medical News.

PARTICULARS of the lectures and demonstrations arranged for next week by the Fellowship of Medicine will be found in our Diary of Post-graduate Courses, published in the *Supplement* at page 252. Copies of syllabuses and tickets of admission can be obtained from the Fellowship, 1, Wimpole Street, W.1. The list of special courses arranged for 1931 is now available.

AT a meeting of the Pharmaceutical Society of Great Britain, to be held at the Society's House (17, Bloomsbury Square, W.C.) on Tuesday, December 9th, at 8.30 p.m., a lecture on endocrine organs will be given by Professor D. M. S. Watson, F.R.S., of University College, London.

A DINNER meeting of the Hunterian Society will be held at Simpson's Restaurant, 77, Poultry, Cheapside, E.C., on Monday, December 15th, at 7.30 p.m. At 8.30 a discussion on puerperal infection will be opened by Dr. Remington Hobbs and Mr. M. Oldershaw.

THE next award of the Hunterian Society's medal will be made in 1932. The object of the medal is to encourage individual efforts among general practitioners in advancing the science and art of medicine. The competition is open to all general practitioners resident within Great Britain, Ireland, and the Channel Islands, whether Fellows of the Society or not. The medal will be awarded for the best essay on some subject, chosen by each candidate, within the province of medicine, surgery, and midwifery. All essays must be received on or before December 31st, 1931. The rules governing the award may be obtained on application to the honorary secretaries, Dr. D. C. Norris, 14, City Road, E.C.2, and Mr. Andrew McAllister, 79, Wimpole Street, W.1.

THE next election to the research scholarships of the Grocers' Company for encouraging original research in sanitary science will take place in May next. The scholarships are each of the value of £300 a year, tenable for one year, but renewable, together with an allowance to meet the cost of apparatus and other expenses in connexion with the work. Forms of application and further information may be obtained from the clerk of the Company, Grocers' Hall, E.C.2.

THE Portsmouth Insurance Committee has elected a medical practitioner, Dr. Montague Way, as its chairman, and a pharmacist as its vice-chairman. In returning thanks for his election Dr. Way recalled the fact that in 1923 he succeeded his cousin, Dr. F. Way, as a member of the Insurance Committee, and before that he was chairman of the Panel Committee. His election indicated the excellent feeling which existed in Portsmouth between medical practitioners, chemists, and approved societies. Harmony had always characterized the work of that committee, and there was a gratifying absence of complaints submitted to the Medical Service Subcommittee, in spite of the fact that the insured persons numbered about 77,000.

THE November issue of *King's College Hospital Gazette* celebrates the centenary of the college. It contains an interesting historical survey by Dr. H. Willoughby Lyle, and Dr. G. F. Still and Mr. H. Tyrrell Gray have collaborated in the composition of "Carmen Scholae Medicinae," both words and music being published in this issue. In addition to the centenary features, the usual articles and news paragraphs are included, the whole making up an attractive production.

THE Cambridge University Press is publishing this week *Lord Balfour in his Relation to Science*, a short memoir written at the request of the council of the Royal Society by Lord Rayleigh. The book is limited to an account of Lord Balfour's scientific and philosophical thought and his administrative work for scientific, industrial, and medical research.

THE twenty-first of Messrs. J. and A. Churchill's series of books on recent advances in medical and scientific subjects is on *Entomology* by A. D. Imms, D.Sc., F.R.S., chief entomologist at the Rothamsted Experimental Station, Harpenden.

THE International Exhibition of Hygiene at Dresden, which was closed on October 13th, will be reopened next year from May 15th to September 30th.

ON the occasion of the fiftieth anniversary of the discovery of the haematozoon of malaria a memorial tablet to A. Laveran was unveiled, on November 6th, in the hall of honour of the Val-de-Grâce Military Hospital, Paris. The ceremony was presided over by Dr. Roux, director of the Institut Pasteur, and was attended by Mme Laveran and representatives of the Institut de France Académie de Médecine and various learned societies.

THE National Homecroft Association has decided to erect a memorial to the late Dr. G. Vivian Poore, formerly professor of medicine at University College, London, and a pioneer of rural hygiene and sanitation, by the establishment of an example of Dr. Poore's principles of sanitation in working order. If funds can be obtained it is proposed to erect a memorial cottage school on the association's settlement near Cheltenham. All interested are asked to communicate with Professor J. W. Scott, University College, Cardiff.

A BILL has been introduced into the House of Commons authorizing county councils and local authorities in distressed areas in England and Wales, as determined by the Minister of Health, to take such steps as they consider necessary for the provision of footwear for children under school age. Similar provision may be made by local education authorities for children attending public elementary schools within their areas where, in the opinion of the Board of Education, acute distress prevails. These authorities are further empowered to assess the capacity of parents to pay for or contribute to the cost of footwear furnished to their children, and such payment may be summarily recovered as a civil debt. The measure is referred to as the Children (Provision of Footwear) Act, 1930, and will continue in force until December 31st, 1931.

THE current issue of the *Norsk Magasin for Laegevidenskaben* is dedicated to Dr. Theodor Frolich, formerly professor of paediatrics at Oslo, on the occasion of his sixtieth birthday, and is devoted entirely to diseases of children.

DR. FRIEDRICH STOTZ of Heilbronn, the inventor of synthetic adrenaline, who recently celebrated his seventieth birthday, has been nominated doctor *honoris causa* by the medical faculty of Marburg University.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the *British Medical Journal* are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:

EDITOR OF THE *BRITISH MEDICAL JOURNAL, Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediscera Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone 24361 Edinburgh).

QUERIES AND ANSWERS.

Myxoedema.

"D. R." asks if acroparaesthesia is a frequent complication of myxoedema, and if there is any objection to giving parathyroid in the morning and thyroid in the afternoon in such a case.

Aphonia in Parkinson's Disease.

"P. M. G." writes: A patient of mine, a man suffering from Parkinson's disease, periodically loses his voice for about ten days at a time. Can anything be done to prevent this happening or to relieve it?

Magnesium Hyposulphite in Asthma.

As numerous inquiries have reached him regarding the dosage of magnesium hyposulphite when given intramuscularly, Dr. M. J. FENTON has written to say that he recommends 5 c.cm. to be given at the outset, increased to 10 c.cm. if necessary.

Natural Labour after Caesarean Section.

MR. GRAHAM W. CHRISTIE, F.R.C.S.Ed. (Ulverston, Lancs) writes: With reference to the query published on November 22nd (p. 891), I can give the following instance as a suitable answer. On December 9th, 1928, I performed Caesarean section for a primipara, aged 23, who was admitted to hospital suffering from ante-partum eclampsia. She was in profound coma, was extremely oedematous, had had several fits just before admission, and had almost complete suppression of urine, which was thickly loaded with albumin. She made a complete recovery. Nine months ago a healthy child was born *per vias naturales* before the arrival of the doctor. She is now in excellent health.

DR. A. Z. C. CRESSY (Wallington, Surrey) writes in reply to the inquiry of "W. M.": I performed Caesarean section for eclampsia on February 24th, 1913. I have since attended the woman in two normal confinements. I reported the case in the *British Medical Journal* on October 19th, 1918 (p. 433).

Income Tax.

Assessment of Practice.

"A. H." had, until January 1st, 1930, a half share in a partnership, and assumed the whole practice as from that date. The past assessments have been on a "cash basis." How should the liability for periods subsequent to January, 1930, be calculated?

*** If "A. H." and the retiring partner join in electing to have the practice regarded as ceasing at December 31st, 1929, and commencing anew, the assessments for 1928-29 and 1929-30 can be adjusted to the actual profits of the firm for those years, and "A. H." will be assessable for the last quarter of 1929-30 and for the year 1930-31 according to the profits made in his first year as a sole practitioner. If that election is not made, the amount of the assessment for 1930-31 will be computed according to the amount of the profits of the firm for the year 1929. We understand that the former alternative applies. In that case it is important that the basis of computation shall correctly represent the earnings of the actual year, and the "cash basis"—which relies for its fairness on the fact that all earnings received in cash will eventually come into the figures, though not necessarily in the correct year—is not applicable. The most convenient way of computing the "earnings" of any particular year is to take the amount of cash received in that year and add the value of the debts outstanding at the end, and deduct the value of the debts outstanding at the beginning of that year.

Expense borne by Partner.

"H.," with a view to improving the organization of the practice in which he has a share, has purchased a small property, which is being used as a branch surgery. He receives 10s. per week from his firm and 3s. 6d. per week from the caretaker, but pays rates and taxes. Can he treat these payments as professional expenses?

*** "H." receives £35 2s. per annum in rents and pays £x in rates; the difference—less expenditure on repairs—represents his net income from the property, and if that amount does not exceed the amount of the net assessment under Schedule A on the property, he is not called on to pay tax in excess of what is fairly due. If, however, the Schedule A assessment does exceed that income, there is some inequity, but it appears to be one for which no remedy is provided. The assessment under Schedule D is on the profits of the firm, and the surgery rent is a firm's expense, the amount of which is fixed by voluntary agreement, and no additional sum is deductible in respect of the same cause of expense.

LETTERS, NOTES, ETC.

The "Medical Register."

THE Registrar of the General Medical Council (44, Hallam Street, W.1) writes: I desire to remind those who find it essential to know whether a practitioner is *legally* qualified or not that, in order to facilitate their work, the Council publishes an Office Edition of the *Medical Register*, printed on inexpensive paper and bound in boards. This edition contains precisely the same names and lists as the official edition. It is issued from this office at a special charge of 10s., post free, but no copies can be issued unless they are ordered and paid for prior to December 31st. I shall be happy to send an order form upon application. The *Medical Register* is the official publication, issued under the Medical Acts, and contains the names of all legally qualified practitioners; there is no other publication which takes its place. The Council also issues each month a list of additions to and deletions from the *Register*. The charge for these will be furnished upon application.

Bronchitis caused by Exhaust Fumes.

"FUMES" (Hampshire), in the course of a letter on the above subject, writes: The experience of one of my patients, who was troubled by bronchial asthma during periods in which he was driving about in a car, and was relieved of his symptoms when he adopted other methods of travelling, has suggested to me that exhaust fumes might produce irritative bronchitis, and perhaps be the unsuspected cause of this condition in a large number of persons. In my own patient the condition began four years ago, the symptoms then being cough, slight expectoration, and some dyspnoea. During the winter months the patient would sometimes be confined to bed several times on account of extreme breathlessness and slight pyrexia; when his temperature had fallen to normal he would again get about in his car, though walking more than a few yards would again bring on an attack of breathlessness. In the summer of 1928 he went on a motor tour, during which the symptoms became so distressing that he had to take to his bed and remain there several weeks. Last summer, however, after another motor tour which had been followed by a similar exacerbation of symptoms, the patient himself discovered that his malady was always worse after a journey by car. He immediately disposed of his car, and, having taken to travelling by train, tram, etc., has had no return of the trouble. During the past three months he has been able to walk several miles daily without suffering dyspnoea. I should like to know what the fumes that caused my patient's illness exactly are, and if there are any means of avoiding the risks to which they so long subjected him.

Symbols of Sex.

DR. G. GREGORY KAYNE (Salford) writes: Dr. R. Sydney Allison, in his interesting article, "A family tendency to tallness of stature, obesity, and diabetes," published in the *British Medical Journal* of November 29th (p. 904), indicates males and females in the genealogical table by the symbols ♂ and ♀ respectively. I had always been under the impression that ♂ was the symbol to be used for the male.

Vacancies.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 68, 69, 70, 71, 72, 73, 76, and 77 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 74, 75, and 76.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *251*.

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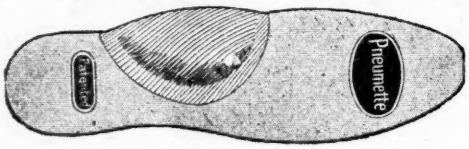

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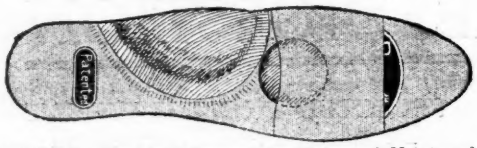

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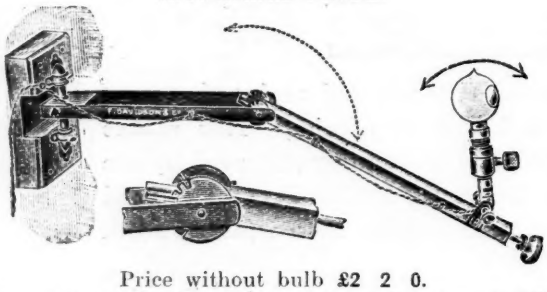

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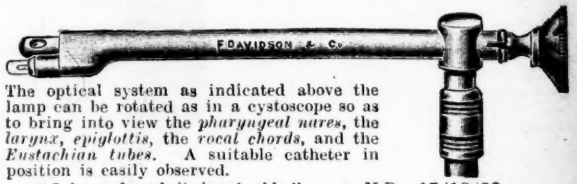

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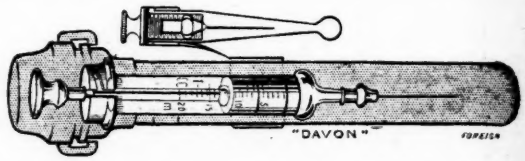

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